This Page Is Inserted by IFW Operations and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents will not correct images, please do not report the images to the Image Problem Mailbox.

CREE

RESEARCH REQUEST FORM

Scientificiand Technical Information Center

Requester's Full Name: K-C-5K/WASTAVA Examiner #: 77964 Date: 67/29/2003	
Art Unit: 1657 Phone Number 30 605-1196 Serial Number: 10/087/95 Mail Box and Bldg/Room Location: 11 PSO-4 Results Format Preferred (circle): PAPER DISK E-MAIL	
If more than one search is submitted, please prioritize searches in order of need.	
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.	
Title of Invention: TRESSIMENT OF ALLERGIC RHINITIS	
Inventors (please provide full names): PARICIA ANNE NUTALL & GUIDO CHRISTIAMU PAESEN	
Earliest Priority Filing Date: 09/01/1999	
For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.	
Please Leave for Brotein Leguence	
12/02 MS-HBP1 = SEQ ID #8 TICK = AMBLYOMMARY	
172 FS-HBP1 = SEQLD#6/ ARGUSSAL	
17/ FIST HBPL - SEELDHT HAEMAPHYSALISA	
D. RET 6 _ (ORNITHODOROS FAL	
ICK = RHIPICEPHALUS EVERTI SANGUINEUS	
and all terms described wit ALLERGIC RHIPKEPHALUS GL. RHIPKEPHALUS GL. RHIPKEPHALUS GL. RHIPKEPHALUS GL. RHIPKEPHALUS GL.	
and all terms destated the RHINITIS!	
and all terms declared with RHINITIS! HTREATMENT: + asme SERIDS	
and all terms declared with RHINITIS! HTREATMENT: + above SERIDS HISTACALIN PROTEIN	
and all terms deleted with RHINITIS! HTREATHENT: A done SERIDS HISTACALIN PROTEIN ECTOPARASITE OF TICK	
and all terms deleted with RHINITIS! TREPTHENT: TREPTHENT: The brain SECTOPHRASITE OF TICK The properties of the pro	•
and all terms deleted with RHINITIS! TREPTHENT: TREPTHENT: The brain SECTOPHRASITE OF TICK The properties of the pro	•
and all terms deleted with RHINITIS TREATMENT. TREATM	
and all terms deleted with RHINITIS THE PROPERTY AND THE	•
and all terms derected and RHINITIS ATREPTHENT TREPTHENT TOTAL TOTA	•
Qual all terms developed ATREATMENT TREATMENT TOTOGO TO THE TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOTOGO TOT	
and all terms labeled with RHINITIS TREATHENT TOTAL TREATHENT TOTAL TREATHENT TOTAL TREATHENT TOTAL TREATHENT TOTAL	
and all terms devices RHINITIS. TREATMENT TREATMENT TREATMENT TREATMENT TREATMENT TREATMENT TREATMENT TREATMENT TREATMENT TO STAFF USE ONLY Type of Search. NA Sequence (#) NA Sequence (#) STN STAFF USE ONLY Type of Search. NA Sequence (#) NA Sequence (#) STN STREATMENT Type of Search. NA Sequence (#) STN STN STREATMENT Vendors and cost where applicable STN STN STREATMENT Vendors and cost where applicable STN STREATMENT STN STREATMENT Vendors and cost where applicable STN STN STREATMENT Vendors and cost where applicable STN STREATMENT STREATMENT TIPE OF MEDICAL STREAMS VENDORS AND STREAMS Vendors and cost where applicable STN STREATMENT STREATMENT STOREMENT STREATMENT ST	
and all terms dentered by ATINITIS! AND OF 15/2003 + CASONE SERIDS AND ENTRE ATMENT HISTAC ALIN PROTEIN ECTO PARASITE CY TICK TORMS PETS! (US TELTO PARASITE CY TICK OR — AMBLYOMMA SPROTE BLOWD FEEDINGS BLOWD FEEDINGS YMACENTOR AD BUDICEUS SEASONNE OR PERSONNE OR (HROWING A CUTE OR (HROWING A C	

PTO-1590 (8-01)



STIC Search Report Biotech-Chem Library

STIC Database Tracking Number: 99955

TO: Kailash C Srivastava

Location: cm-1/11a12/11b01

Art Unit: 1651

Monday, August 04, 2003

Case Serial Number: 10/087195

From: Susan Hanley

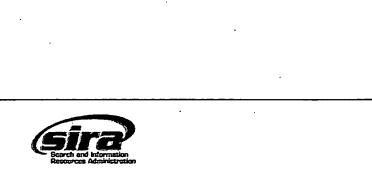
Location: Biotech-Chem Library

CM1 6B05

Phone: 305-4053

susan.hanley@uspto.gov

Search Notes





STIC SEARCH RESULTS FEEDBACK FORM

Biotech-Chem Library

Questions about the scope or the results of the search? Contact the searcher or contact:

Mary Hale, Information Branch Supervisor 308-4258, CM1-1E01

Voluntary Results Feedback Form
> I am an examiner in Workgroup: Example: 1610
> Relevant prior art found, search results used as follows:
102 rejection
☐ 103 rejection
☐ Cited as being of interest.
Helped examiner better understand the invention.
Helped examiner better understand the state of the art in their technology.
Types of relevant prior art found:
☐ Foreign Patent(s)
 Non-Patent Literature (journal articles, conference proceedings, new product announcements etc.)
> Relevant prior art not found:
☐ Results verified the lack of relevant prior art (helped determine patentability).
Results were not useful in determining patentability or understanding the invention.
Comments:

Dopolior send completed to make STICIBIO each Chamillabetry GMI = Circ. Deak



```
=> d sqide 1
    ANSWER 1 OF 3 REGISTRY COPYRIGHT 2003 ACS on STN
                                                          MS HBP1
L6
    329085-10-1 REGISTRY
RN
    3: PN: WOO116164 TABLE: 1 unclaimed protein (9CI)
                                                       (CA INDEX NAME)
CN
OTHER NAMES:
    3: PN: WOO115719 TABLE: 1 unclaimed protein
CN
    PROTEIN SEQUENCE
FS
SQL 182
PATENT ANNOTATIONS (PNTE):
Sequence | Patent
Source | Reference
Not Given|W02001015719
         |unclaimed
         TABLE 1
         |W02001016164
         |unclaimed
         |TABLE 1
        1 NPTWANEAKL GSYQDAWKSL QQDQNKRYYL AQATQTTDGV WGEEFTCVSV
SEQ
        51 TAEKIGKKKL NATILYKNKH LTDLKESHET ITVWKAYDYT TENGIKYETQ
       101 GTRTQTFEDV FVFSDYKNCD VIFVPKERGS DEGDYELWVS EDKIDKIPDC
       151 CKFTMAYFAQ QQEKTVRNVY TDSSCKPAPA QN
MF
     Unspecified
CI
     MAN
     CA
SR
                 CA, CAPLUS, TOXCENTER, USPATFULL
     STN Files:
10
              2 REFERENCES IN FILE CA (1947 TO DATE)
               2 REFERENCES IN FILE CAPLUS (1947 TO DATE)
=> d sqide 2
     ANSWER 2 OF 3 REGISTRY COPYRIGHT 2003 ACS on STN
L6
                                                            FSHBP2
     329085-09-8 REGISTRY
RN
     2: PN: WOO116164 TABLE: 1 unclaimed sequence (9CI) (CA INDEX NAME)
CN
     PROTEIN SEQUENCE
FS
SQL
    171
PATENT ANNOTATIONS (PNTE):
Sequence | Patent
Source
         |Reference
Not Given|W02001016164
         lunclaimed
         |TABLE 1
         1 NQPDWADEAA NGAHQDAWKS LKADVENVYY MVKATYKNDP VWGNDFTCVG
SEQ
        51 VMANDVNEDE KSIQAEFLFM NNADTNMQFA TEKVTAVKMY GYNRENAFRY
       101 ETEDGQVFTD VIAYSDDNCD VIYVPGTDGN EEGYELWTTD YDNIPANCLN
       151 KFNEYAVGRE TRDVFTSACL E
MF
     Unspecified
     MAN
CI
SR
     STN Files: CA, CAPLUS, TOXCENTER, USPATFULL
LC
```

1 REFERENCES IN FILE CA (1947 TO DATE)
1 REFERENCES IN FILE CAPLUS (1947 TO DATE)

```
=> d sqide 3
    ANSWER 3 OF 3 REGISTRY COPYRIGHT 2003 ACS on STN
L6
                                                             FS-HBPI
    329085-08-7 REGISTRY
RN
    1: PN: WOO116164 TABLE: 1 unclaimed protein (9CI) (CA INDEX NAME)
CN
OTHER NAMES:
   1: PN: WOO115719 TABLE: 1 unclaimed protein
FS
    PROTEIN SEQUENCE
SQL 172
PATENT ANNOTATIONS (PNTE):
Sequence | Patent
Source | Reference
Not Given|W02001015719
         |unclaimed
         |TABLE 1
         W02001016164
         |unclaimed
         TABLE 1
        1 DKPVWADEAA NGEHQDAWKH LQKLVEENYD LIKATYKNDP VWGNDFTCVG
SEQ
       51 TAAQNLNEDE KNVEAWFMFM NNADTVYQHT FEKATPDKMY GYNKENAITY
      101 QTEDGQVLTD VLAFSDDNCY VIYALGPDGS GAGYELWATD YTDVPASCLE
      151 KFNEYAAGLP VRDVYTSDCL PE
MF
     Unspecified
CI
    MAN
SR
     CA
     STN Files: CA, CAPLUS, TOXCENTER, USPATFULL
LC
               2 REFERENCES IN FILE CA (1947 TO DATE)
              2 REFERENCES IN FILE CAPLUS (1947 TO DATE)
```

=> d sqide 128 D. RET 6 L28 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2003 ACS on STN 200220-35-5 REGISTRY RN Protein D.RET6 (Dermacenter reticularis histamine-binding) (9CI) (CA CN INDEX NAME) FS PROTEIN SEQUENCE SQL 209 SEQ 1 MKMQVVLLLT FVSAALATQA ETTSAKAGEN PLWAHEELLG KYQDAWKSID 51 QGVSVTYVLA KTTYENDTGS WGSQFKCLQV QEIERKEEDY TVTSVFTFRN 101 ASSPIKYYNV TETVKAVFQY GYKNIRNAIE YQVGGGLNIT DTLIFTDGEL 151 CDVFYVPNAD QGCELWVKKS HYKHVPDYCT FVFNVFCAKD RKTYDIFNEE 201 CVYNGEPWL **RELATED SEQUENCES AVAILABLE WITH SEQLINK** MF Unspecified CIMAN SR CA STN Files: CA, CAPLUS LC 2 REFERENCES IN FILE CA (1947 TO DATE)

2 REFERENCES IN FILE CAPLUS (1947 TO DATE)

=> d ibib abs hitstr ind

```
L31 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER:
                            2000:799221 HCAPLUS
DOCUMENT NUMBER:
                            134:55073
                            Vector-host interactions in disease transmission
TITLE:
AUTHOR(S):
                            Nuttall, P. A.; Paesen, G. C.; Lawrie, C. H.; Wang, H.
CORPORATE SOURCE:
                            CEH Institute of Virology and Environmental
                            Microbiology, Oxford, OX1 3SR, UK
                            Journal of Molecular Microbiology and Biotechnology
SOURCE:
                            (2000), 2(4), 381-386
CODEN: JMMBFF; ISSN: 1464-1801
 PUBLISHER:
                            Horizon Scientific Press
                            Journal; General Review
DOCUMENT TYPE:
                            English
 LANGUAGE:
      A review with 56 refs. Tick-borne spirochetes include borreliae that cause Lyme disease and relapsing fever in humans. They survive in a
      triangle of parasitic interactions between the spirochete and its
      vertebrate host, the spirochete and its tick vector, and the host and the
      tick. Until recently, the significance of vector-host interactions in the
      transmission of arthropod-borne disease agents has been overlooked.
      However, there is now compelling evidence that the pharmacol. activity of
      tick saliva can have a profound effect on pathogen transmission both from
      infected tick to uninfected host, and from infected host to uninfected tick. The salivary glands of ticks provide a pharmacopoeia of
      anti-inflammatory, anti-hemostatic and anti-immune mols. These include
      bioactive proteins that control histamine, bind Igs, and inhibit the
      alternative complement cascade. The effect of these mols. is to provide a privileged site at the tick-host interface in which borreliae and other
      tick-borne pathogens are sheltered from the normal innate and acquired
      host immune mechanisms that combat infections. Understanding the key
      events at the tick vector-host interface, that promote spirochete
      infection and transmission, will provide a better understanding of the
      epidemiol. and ecol. of these important human pathogens.
      15-0 (Immunochemistry)
      Section cross-reference(s): 12
     review immunomodulator tick Borrelia transmission
 ST ·
      Proteins, specific or class
      RL: BOC (Biological occurrence); BSU (Biological study, unclassified);
      BIOL (Biological study); OCCU (Occurrence)
         (Ig-binding proteins; tick vector-host interaction and Borrelia
         transmission in relation to salivary expression of)
 IT
      Complement
         (activation; tick vector-host interaction and Borrelia transmission in
         relation to salivary expression of inhibitors of)
      Proteins, specific or class
 IT
      RL: BOC (Biological occurrence); BSU (Biological study, unclassified);
      BIOL (Biological study); OCCU (Occurrence)
         (histacalins; tick vector-host interaction and Borrelia
         transmission in relation to salivary expression of)
 IT
      Borrelia
      Ixodes
      Lyme disease
      Saliva
         (salivary immunomodulators in tick vector-host interaction and Borrelia
         transmission)
                                  THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS
 REFERENCE COUNT:
                            56
                                   RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
```

```
=> d que 132
              4 SEA FILE=REGISTRY ABB=ON PLU=ON (329085-08-7/BI OR 329085-09-
L5
               8/BI OR 329085-10-1/BI OR 51-45-6/BI)
              3 SEA FILE=REGISTRY ABB=ON PLU=ON L5 AND PROTEIN/FS
L6
              3 SEA FILE=HCAPLUS ABB=ON PLU=ON HISTACALIN?
L9
                                        PLU=ON
                                                L6
             2 SEA FILE=HCAPLUS ABB=ON
L10
              4 SEA FILE=HCAPLUS ABB=ON
                                        PLU=ON
                                                FS-HBP1
L11
             4 SEA FILE=HCAPLUS ABB=ON
                                        PLU=ON
                                                FS-HBP2
L13
             4 SEA FILE=HCAPLUS ABB=ON
                                        PLU=ON
                                                MS-HBP1
L14
L15
             4 SEA FILE=HCAPLUS ABB=ON
                                        PLU=ON
                                                "D.RET6"
             18 SEA FILE=HCAPLUS ABB=ON
                                        PLU=ON
                                                HISTAMINE BINDING PROTEIN
L17
              4 SEA FILE=HCAPLUS ABB=ON
                                        PLU=ON
                                                HISTAMINE BINDING PROTEIN-1
L18
              4 SEA FILE=HCAPLUS ABB=ON
                                        PLU=ON
                                                HISTAMINE BINDING PROTEIN-2
L19
L24
              6 SEA FILE=HCAPLUS ABB=ON
                                        PLU=ON
                                                (L9 OR L10) OR L11 OR (L13 OR
               L14 OR L15) OR (L18 OR L19)
            14 SEA FILE-HOAREUS ABBEON RLUEON LIV NO MEZA
                                                                             on HBP roteins
                                                                                have the
                                                            Registry #15 for
D.RETG, SFHBP1 2 or
                                                             ms I+BPL
```

=> d ibib abs hitstr 1-14 ind

L32 ANSWER 1 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER:

2003:492892 HCAPLUS

TITLE:

AUTHOR(S):

RNA interference in ticks: a study using

histamine binding protein

dsRNA in the female tick Amblyomma americanum

Aljamali, M. N.; Bior, A. D.; Sauer, J. R.; Essenberg, R. C.

CORPORATE SOURCE:

Department Biochemistry and Molecular Biology,

Oklahoma State University, Stillwater, OK, 74078, USA Insect Molecular Biology (2003), 12(3), 299-305

SOURCE:

CODEN: IMBIE3; ISSN: 0962-1075

PUBLISHER:

Blackwell Publishing Ltd.

DOCUMENT TYPE:

Journal

LANGUAGE:

English RNA interference (RNAi), a gene silencing process, has been recently exploited to det. gene function by degrading specific mRNAs in several eukaryotic organisms. We constructed a double stranded RNA (dsRNA) from a

previously cloned putative Amblyomma americanum histamine binding protein (HBP) to test the significance of using

this methodol. in the assessment of the function and importance of gene products in ectoparasitic ticks. The female salivary glands incubated in vitro with HBP dsRNA had a significantly lower histamine binding ability. In addn., the injection of HBP dsRNA into the unfed females led both to a reduced histamine binding ability in the isolated salivary glands and to an aberrant tick feeding pattern or host response. Mol. data demonstrated less expression of the HBP mRNA in the RNAi group. Taken together, these results suggest that RNAi might be an important tool for assessing the significance of tick salivary gland secreted proteins modulating responses at the tick-host interface.

INDEXING IN PROGRESS IT

CC 3 (Biochemical Genetics)

IT Amblyomma americanum

Protein sequences

cDNA sequences

(rNA interference in ticks, a study using histamine binding protein dsRNA in the female tick Amblyomma americanum)

504653-46-7, GenBank AY246557 IT

RL: BSU (Biological study, unclassified); PRP (Properties); BIOL

(Biological study)

(nucleotide sequence; rNA interference in ticks, a study using

histamine binding protein dsRNA in the

female tick Amblyomma americanum)

REFERENCE COUNT:

30 ·

THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 2 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER:

2002:385176 HCAPLUS

DOCUMENT NUMBER:

137:229499

TITLE:

Comparison of differentially expressed genes in the salivary glands of male ticks, Amblyomma americanum

and Dermacentor andersoni

AUTHOR(S):

Bior, Abdelaziz D.; Essenberg, Richard C.; Sauer, John

CORPORATE SOURCE:

246 Noble Research Center, Department of Biochemistry and Molecular Biology, Oklahoma State University,

Stillwater, OK, 74078-3035, USA

SOURCE:

Insect Biochemistry and Molecular Biology (2002),

32(6), 645-655 CODEN: IBMBES; ISSN: 0965-1748

PUBLISHER:

Elsevier Science Ltd.

DOCUMENT TYPE:

Journal

LANGUAGE:

English

Genes expressed differentially in the salivary glands of unfed and fed male ticks, Amblyomma americanum (L.), were identified, cloned and sequenced, and some were compared with those expressed in the salivary glands of Dermacentor andersoni. Total protein and RNA increased sixfold in the salivary glands of fed male A. americanum, while in fed male D. andersoni salivary glands, RNA increased approx. 3.5 times. Feeding D. andersoni in the presence of females increased total RNA by 25% over those fed in the absence of females. Complementary DNAs were synthesized from RNA obtained from unfed and fed ticks and amplified using RNA arbitrarily primed polymerase chain reaction (RAP-PCR) with three different primers in sep. reactions. Differential display showed clear banding differences between the fed and the unfed ticks in A. americanum and D. andersoni. Sixty-one cDNA fragments that appeared to be from differentially expressed genes in A. americanum were isolated, cloned and sequenced. Hybridization reactions with labeled cDNA probes confirmed the differential expression of many of the genes in unfed and fed ticks' salivary glands; however, many of the bands contained more than one fragment and some of the fragments isolated from apparently differential bands were not specific. Sequences for 28 of the cDNA fragments (150-600 nucleotides in length) demonstrated similarity to genes in the databases, but nine of these were similar to sequences of unknown function. Some of the gene fragments identified may be important to tick feeding or tick salivary gland physiol., including a histamine-binding protein, an org. ion transporter, an apoptosis inhibitor, a cathepsin-B-like cysteine protease, proteins involved in gene regulation and several proteins involved in protein synthesis. Cross-hybridization of identified cDNAs from A. americanum with cDNA probes synthesized from D. andersoni total RNA did not show significant similarity between the two species.

CC 12-2 (Nonmammalian Biochemistry) Section cross-reference(s): 3

gene expression salivary gland tick Amblyomma Dermacentor male feeding; ST sequence expressed sequence tag male feeding salivary gland tick

IT Amblyomma americanum Dermacentor andersoni Salivary gland

Sex

(comparison of differentially expressed genes in the salivary glands of male ticks. Amblyomma americanum and Dermacentor andersoni)

IT

RL: BSU (Biological study, unclassified); BIOL (Biological study) (comparison of differentially expressed genes in the salivary glands of male ticks, Amblyomma americanum and Dermacentor andersoni)

IT EST (expressed sequence tag)

Gene, animal

RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)

(comparison of differentially expressed genes in the salivary glands of male ticks, Amblyomma americanum and Dermacentor andersoni)

IT cDNA sequences

(for differentially expressed genes in the salivary glands of male ticks, Amblyomma americanum and Dermacentor andersoni)

IT

(meal of; comparison of differentially expressed genes in the salivary

```
glands of male ticks, Amblyomma americanum and Dermacentor andersoni)
IT
     Proteins
     RL: BSU (Biological study, unclassified); BIOL (Biological study)
        (salivary gland; comparison of differentially expressed genes in the
        salivary glands of male ticks, Amblyomma americanum and Dermacentor
        andersoni)
                                      347782-66-5, GenBank BI273530
347782-68-7, GenBank BI273532
IT
     347782-65-4, GenBank BI273529
     347782-67-6, GenBank BI273531
     347782-69-8, GenBank BI273542
                                      347782-70-1, GenBank BI273543
     347782-71-2, GenBank BI273544
                                      347782-72-3, GenBank BI273545
                                      347782-74-5, GenBank BI273547
347782-76-7, GenBank BI273549
     347782-73-4, GenBank BI273546
     347782-75-6, GenBank BI273548
     347782-77-8, GenBank BI273550
                                      347782-78-9, GenBank BI273533
                                      347782-80-3, GenBank BI273535
     347782-79-0, GenBank BI273534
                                      347782-82-5, GenBank BI273537
     347782-81-4, GenBank BI273536
                                      347782-84-7, GenBank BI273539
     347782-83-6, GenBank BI273538
                                      347782-86-9, GenBank BI273541
     347782-85-8, GenBank BI273540
     347782-87-0, GenBank BI273551
                                      347782-88-1, GenBank BI273552
                                      347782-90-5, GenBank BI273555
     347782-89-2, GenBank BI273554
                                      347782-92-7, GenBank BI273557
     347782-91-6, GenBank BI273556
                                      347782-94-9, GenBank BI273559
     347782-93-8, GenBank BI273558
     347782-95-0, GenBank BI273560
                                      347782-96-1, GenBank BI273561
     347782-97-2, GenBank BI273562
                                      347782-98-3, GenBank BI273563
                                      347783-00-0, GenBank BI273565
     347782-99-4, GenBank BI273564
     347783-01-1, GenBank BI273566
                                      347783-02-2, GenBank BI273567
                                      347783-04-4, GenBank BI273569
     347783-03-3, GenBank BI273568
     347783-05-5, GenBank BI273570
                                      347783-06-6, GenBank BI273571
     347783-07-7, GenBank BI273572
                                      347783-08-8, GenBank BI273573
     347783-09-9, GenBank BI273574
                                      347783-10-2, GenBank BI273575
     347783-11-3, GenBank BI273576
                                      347783-12-4, GenBank BI273577
     347783-13-5, GenBank BI273578
                                      347783-14-6, GenBank BI273579
     347783-15-7, GenBank BI273580
                                      347783-16-8, GenBank BI273581
     347783-17-9, GenBank BI273582
                                      347783-18-0, GenBank BI273583
                                      347783-20-4, GenBank BI273585
     347783-19-1, GenBank BI273584
                                      347783-22-6, GenBank BI273587
     347783-21-5, GenBank BI273586
                                      347783-24-8, GenBank BI273589
     347783-23-7, GenBank BI273588
     347783-25-9, GenBank BI273590
                                      347783-26-0, GenBank BI273591
     347783-27-1, GenBank BI273592
                                      347783-28-2, GenBank BI273593
     347783-29-3, GenBank BI273594
                                      347783-30-6, GenBank BI273595
     347783-31-7, GenBank BI273596
                                      347783-32-8, GenBank BI273597
     347783-33-9, GenBank BI273598
                                      347783-34-0, GenBank BI273599
     347783-35-1, GenBank BI273600
                                      347783-36-2, GenBank BI273601
     347783-37-3, GenBank BI273602
                                      347783-38-4, GenBank BI273603
     347783-39-5, GenBank BI273604
                                      347783-40-8, GenBank BI273605
     347783-41-9, GenBank BI273606
                                      347783-42-0, GenBank BI273607
     347783-43-1, GenBank BI273608
                                      347783-44-2, GenBank BI273609
                                      347783-46-4, GenBank BI273611
     347783-45-3, GenBank BI273610
                                      347783-48-6, GenBank BI273613
     347783-47-5, GenBank BI273612
                                      348411-30-3, GenBank BI275494
     347783-49-7, GenBank BI273614
                                      348411-32-5, GenBank BI275496
     348411-31-4, GenBank BI275495
                                      348411-34-7, GenBank BI275498
     348411-33-6, GenBank BI275497
     348411-35-8, GenBank BI275499
                                      348411-36-9, GenBank BI275500
     348411-37-0, GenBank BI275501
                                      348411-38-1, GenBank BI275502
                                      348411-40-5, GenBank BI275504
     348411-39-2, GenBank BI275503
     348411-41-6, GenBank BI275505
                                      348411-42-7, GenBank BI275506
                                      348411-44-9, GenBank BI275508
     348411-43-8, GenBank BI275507
     348411-45-0, GenBank BI275509
                                      348411-46-1, GenBank BI275510
     348411-47-2, GenBank BI275511
                                      348411-48-3, GenBank BI275512
                                      386326-31-4, GenBank BI273553
     348411-49-4, GenBank BI275513
     RL: BSU (Biological study, unclassified); PRP (Properties); BIOL
```

(Biological study) (nucleotide sequence; comparison of differentially expressed genes in the salivary glands of male ticks, Amblyomma americanum and Dermacentor andersoni) THERE ARE 61 CITED REFERENCES AVAILABLE FOR THIS REFERENCE COUNT: 61 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT L32 ANSWER 3 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN 2002:231098 HCAPLUS ACCESSION NUMBER: DOCUMENT NUMBER: 136:383078 A high affinity serotonin- and histamine-binding TITLE: lipocalin from tick saliva Sangamnatdej, S.; Paesen, G. C.; Slovak, M.; Nuttall, AUTHOR(S): P. A. CEH Oxford, Oxford, OX1 3SR, UK CORPORATE SOURCE: Insect Molecular Biology (2002), 11(1), 79-86 SOURCE: CODEN: IMBIE3; ISSN: 0962-1075 PUBLISHER: Blackwell Publishing Ltd. DOCUMENT TYPE: Journal English LANGUAGE: To overcome the inflammatory response in its host, the cattle-feeding, brown ear tick secretes histamine-binding proteins into the feeding site. These proteins are .beta.-barrels
with 2 internal binding sites: a high-affinity (H) site for histamine and a site (L) for which the natural ligand is unknown. Here we report a related protein (SHBP), secreted by a rodent- and cattle-feeding tick, that traps both histamine and serotonin. The histamine-binding H site is well conserved in SHBP, whereas residue changes in the L-like site are consistent with binding of the bulkier serotonin mol. As histamine is a key inflammatory mediator in cattle, while serotonin takes on this role in rodents, the diversification of these tick proteins may reflect host adaptation. 12-1 (Nonmammalian Biochemistry) Section cross-reference(s): 3, 6 Dermacentor saliva serotonin histamine binding lipocalin sequence ST Dermacentor reticulatus IT Feeding Protein sequences Saliva cDNA sequences (high affinity serotonin- and histamine-binding lipocalin sequence and identification from tick saliva) IT RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study) (lipocalin; high affinity serotonin- and histamine-binding lipocalin sequence and identification from tick saliva) IT 426310-26-1, Lipocalin (Dermacentor reticulatus) RL: BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study) (amino acid sequence; high affinity serotonin- and histamine-binding lipocalin sequence and identification from tick saliva) 50-67-9, Serotonin, biological studies 51-45-6, Histamine, biological IT studies RL: BSU (Biological study, unclassified); BIOL (Biological study) (high affinity serotonin- and histamine-binding lipocalin sequence and identification from tick saliva) 381905-30-2, GenBank AF217101 IT

RL: BSU (Biological study, unclassified); PRP (Properties); BIOL

(Biological study)

These are all of the cites for the Registry # 5 for FSHBP1 ; 2, MSHBP1 & D. RET 6 (SHBP)

```
SRIVASTAVA 10/087,195 # SHBPI
=> d que 130
              4 SEA FILE=REGISTRY ABB=ON PLU=ON (329085-08-7/BI OR 329085-09-
8/BI OR (329085-10-1)/BI OR <del>51-45-6/BI</del>)
L5
              3 SEA FILE=REGISTRY ABB=ON PLU=ON L5 AND PROTEIN/FS
L6
              3 SEA FILE=HCAPLUS ABB=ON PLU=ON HISTACALIN? 3 cites for Histacalin
L9
                                                  L62 cites for #SHBP1 12 1 MSHBP1 from
              2 SEA FILE=HCAPLUS ABB=ON
                                          PLU=ON
L10
              4 SEA FILE=HCAPLUS ABB=ON
                                          PLU=ON
                                                  FS-HBP1\
L11
                                                                                                Rgistry
              4 SEA FILE=HCAPLUS ABB=ON
                                          PLU=ON
                                                  FS-HBP2
L13
                                                             term searching
                                                  MS-HBP1
              4 SEA FILE=HCAPLUS ABB=ON
                                          PLU=ON
L14
                                                  "D.RET6",
              4 SEA FILE=HCAPLUS ABB=ON
                                          PLU=ON
L15
                                                  HISTAMINE BINDING PROTEIN-1
              4 SEA FILE=HCAPLUS ABB=ON
                                          PLU=ON
L18
                                                  HISTAMINE BINDING PROTEIN-2,
L19
              4 SEA FILE=HCAPLUS ABB=ON
                                          PLU=ON
                                                  (L9 OR L10) OR L11 OR (L13 OR Cites total
                                          PLU=ON
              6 SEA FILE=HCAPLUS ABB=ON
L24
                L14 OR L15) OR (L18 OR L19)
                                             6
             31 SEA FILE=REGISTRY ABB=ON PLU=ON (51-45-6/BI OR 200220-28-6/BI
L25
                 OR 200220-29-7/BI OR 200220-30-0/BI OR 200220-32-2/BI OR
                                                                                     31 compounds
                200220-33-3/BI OR 200220-34-4/BI OR 200220-31-1/BI OR 200220-35
                -5/BI OR 329085-08-7/BI OR 329085-10-1/BI OR 226219-91-6/BI OR
                226890-87-5/BI OR 226890-96-6/BI OR 226890-97-7/BI OR 226890-98
                -8/BI OR 226891-00-5/BI OR 226891-16-3/BI OR 226891-31-2/BI OR
                                                                                    bined L24
                226891-34-5/BI OR 226891-36-7/BI OR 226891-37-8/BI OR 226891-38
                -9/BI OR 226891-39-0/BI OR 226891-40-3/BI OR 226927-07-7/BI OR
                329085-09-8/BI OR 329085-11-2/BI OR 50-67-9/BI OR 501-75-7/BI
                OR 644-42-8/BI)
             16 SEA FILE=REGISTRY ABB=ON PLU=ON L25 AND PROTEIN/FS 16 are proteins
L26
              5 SEA FILE=HCAPLUS ABB=ON PLU=ON L24 AND L26 5 c けんり 1 SEA FILE=REGISTRY ABB=ON PLU=ON L26 AND SQL=209 ← カスモナム
L27
L28
              2 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 2 cites for
L29
           STSEAN FILLE HEARING ABBEON PLUEON LZOTOR 1227 5 cites
```

=> d ibib abs hitstr ind 1-5 130 L30 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2003 ACS on STN ACCESSION NUMBER: 2001:168020 HCAPLUS 134:217189 DOCUMENT NUMBER: Treatment of allergic rhinitis with proteins from TITLE: ticks Nuttall, Patricia Anne; Paesen, Guido Christiaan INVENTOR(S): Evolutec Limited, UK PATENT ASSIGNEE(S): PCT Int. Appl., 19 pp. SOURCE: CODEN: PIXXD2 DOCUMENT TYPE: **Patent** English LANGUAGE: FAMILY ACC. NUM. COUNT: PATENT INFORMATION: APPLICATION NO. PATENT NO. KIND DATE DATE _____ WO 2000-GB3287 20000824 WO 2001016164 A2 20010308

```
WO 2001016164
                        Α3
                              20010503
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
              CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
              LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
              SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,
              YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
              DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
              CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
                                              BR 2000-13655
                                                                 20000824
                              20020507
     BR 2000013655
                              20020529
                                              EP 2000-954788
                                                                 20000824
     EP 1207899
                        A2
             AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
              IE, SI, LT, LV, FI, RO, MK, CY, AL
                                               JP 2001-519725
                                                                 20000824
     JP 2003508410
                        T2
                              20030304
     US 2002193306
                                              US 2002-87195
                                                                 20020301
                              20021219
                         A1
PRIORITY APPLN. INFO.:
                                           GB 1999-20673
                                                              A 19990901
                                                             W 20000824
                                           WO 2000-GB3287
```

AB The invention relates to the discovery that various proteins isolated from ticks are effective in the treatment and prevention of allergic rhinitis. These proteins may most suitably be applied to an effected area and are thus effective to treat this condition and to ameliorate its symptoms. Human subjects were challenged with histamine and then were treated with histamine-binding protein, MS-HBP1.

IT 329085-08-7

RL: PRP (Properties)

(unclaimed protein sequence; treatment of allergic rhinitis with proteins from ticks)

RN 329085-08-7 HCAPLUS

CN 1: PN: WOO116164 TABLE: 1 unclaimed protein (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 329085-09-8 329085-10-1

RL: PRP (Properties)

(unclaimed sequence; treatment of allergic rhinitis with proteins from ticks)

RN 329085-09-8 HCAPLUS

CN 2: PN: WOO116164 TABLE: 1 unclaimed sequence (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

```
329085-10-1 HCAPLUS
RN
    3: PN: WOO116164 TABLE: 1 unclaimed protein (9CI) (CA INDEX NAME)
CN
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
    ICM C07K014-00
IC
    1-7 (Pharmacology)
CC
    Section cross-reference(s): 12, 15
    allergic rhinitis treatment protein tick; histamine binding protein MSHBP1
ST
     treatment allergic rhinitis
    Proteins, specific or class
TT
    RL: BAC (Biological activity or effector, except adverse); BSU (Biological
     study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES
        (D.RET6; treatment of allergic rhinitis with
        proteins from ticks)
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BSU (Biological
     study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES
        (FS-HBP1 (female-specific histamine-
        binding protein 1); treatment of allergic
        rhinitis with proteins from ticks)
IT
     Proteins, specific or class
     RL: BAC (Biological activity or effector, except adverse); BSU (Biological
     study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES
     (Uses)
        (FS-HBP2 (female-specific histamine-
        binding protein 2); treatment of allergic
        rhinitis with proteins from ticks)
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BSU (Biological
     study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES
     (Uses)
        (MS-HBP1 (male-specific histamine-
        binding protein 1); treatment of allergic
        rhinitis with proteins from ticks)
IT
     Nose
        (allergic rhinitis; treatment of allergic rhinitis with proteins from
        ticks)
     Nervous system stimulants
IT
        (antisedatives, medicament also contg.; treatment of allergic rhinitis
        with proteins from ticks)
IT
        (ecto-, histacalin of; treatment of allergic rhinitis with
        proteins from ticks)
IT
     Proteins, specific or class
     RL: BAC (Biological activity or effector, except adverse); BSU (Biological
     study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES
        (histacalins; treatment of allergic rhinitis with proteins
        from ticks)
IT
     Antihistamines
        (medicament also contg.; treatment of allergic rhinitis with proteins
        from ticks)
     Proteins, general, biological studies
IT
     RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
        (of ticks; treatment of allergic rhinitis with proteins from ticks)
IT
     Allergy inhibitors
     Drug delivery systems
     Hay fever
```

```
Mite and Tick
        (treatment of allergic rhinitis with proteins from ticks)
     51-45-6, Histamine, biological studies
IT
    RL: ADV (Adverse effect, including toxicity); BPR (Biological process);
    BSU (Biological study, unclassified); BIOL (Biological study); PROC
        (proteins binding to; treatment of allergic rhinitis with proteins from
        ticks)
IT
     329085-08-7
     RL: PRP (Properties)
        (unclaimed protein sequence; treatment of allergic rhinitis with
        proteins from ticks)
IT
     329085-09-8 329085-10-1
     RL: PRP (Properties)
        (unclaimed sequence; treatment of allergic rhinitis with proteins from
        ticks)
L30 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2003 ACS on STN
                         2001:167826 HCAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         134:217188
                         use of histacalin protein for treatment or
TITLE:
                         prevention of conjunctivitis
INVENTOR(S):
                         Nuttall, Patricia Anne; Paesen, Guido Christiaan
                         Evolutec Limited, UK
PATENT ASSIGNEE(S):
                         PCT Int. Appl., 19 pp.
SOURCE:
                         CODEN: PIXXD2
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         English
FAMILY ACC. NUM. COUNT:
PATENT INFORMATION:
     PATENT NO.
                      KIND DATE
                                           APPLICATION NO.
                                                            DATE
                            20010308
                                           WO 2000-GB3282
                                                            20000824
    WO 2001015719
                       Α2
                            20010510
     WO 2001015719
                       Α3
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
             HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
             LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,
             SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,
             YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
             DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,
             CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
                                           BR 2000-13665
                                                            20000824
     BR 2000013665
                            20020514
                       Α
                            20020529
                                           EP 2000-954784
                                                            20000824
     EP 1207898
                       A2
        R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL
                            20030304
                                           JP 2001-519931
                                                            20000824
     JP 2003508445
                       T2
                                           US 2002-85572
                                                            20020227
     US 2002151499
                            20021017
                       A1
PRIORITY APPLN. INFO.:
                                        GB 1999-20674
                                                         Α
                                                            19990901
                                        WO 2000-GB3282
                                                         W
                                                            20000824
     Various histacalin proteins isolated from ticks are effective in
AB
     the treatment of conjunctivitis. These proteins may most suitably be
     applied topically to an affected area and are effective to ameliorate the
     symptoms of this condition.
     329085-08-7 329085-10-1 329085-11-2
IT
     RL: PRP (Properties)
        (unclaimed sequence; use of histacalin protein for treatment
        or prevention of conjunctivitis)
```

```
329085-08-7 HCAPLUS
RN
    1: PN: WOO116164 TABLE: 1 unclaimed protein (9CI) (CA INDEX NAME)
CN
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
     329085-10-1 HCAPLUS
RN
     3: PN: WOO116164 TABLE: 1 unclaimed protein (9CI) (CA INDEX NAME)
CN
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
    329085-11-2 HCAPLUS
RN
     2: PN: WOO115719 TABLE: 1 unclaimed sequence (9CI) (CA INDEX NAME)
CN
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
    ICM A61K038-00
IC
     1-7 (Pharmacology)
CC
     Section cross-reference(s): 63
ST
    histacalin antihistamine antiallergic antiinflammatory
     conjunctivitis
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BSU (Biological
     study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES
        (D.RET6; histacalin protein for treatment
        or prevention conjunctivitis)
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BSU (Biological
     study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES
        (FS-HBP1; histacalin protein for
        treatment or prevention conjunctivitis)
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BSU (Biological
     study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES
        (FS-HBP2; histacalin protein for
        treatment or prevention conjunctivitis)
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BSU (Biological
     study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES
        (MS-HBP1; histacalin protein for
        treatment or prevention conjunctivitis)
IT
     Eye, disease
        (allergic conjunctivitis; histacalin protein for treatment or
        prevention conjunctivitis)
IT
     Eye, disease
        (conjunctivitis: histacalin protein for treatment or
        prevention conjunctivitis)
IT
        (degranulation; histacalin protein for treatment or
        prevention conjunctivitis)
IT
        (ecto-, blood-feeding; histacalin protein for treatment or
        prevention conjunctivitis)
IT
     Allergy inhibitors
     Anti-inflammatory agents
     Antihistamines
     Drug delivery systems
     Mite and Tick
     Protein sequences
        (histacalin protein for treatment or prevention
```

conjunctivitis) Proteins, specific or class TT RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (histacalin; histacalin protein for treatment or prevention conjunctivitis) Cell degranulation IT (mast cell; histacalin protein for treatment or prevention conjunctivitis) Mental activity IT (sedation, antisedatives; histacalin protein for treatment or prevention conjunctivitis) IT Drug delivery systems (solns., ophthalmic; histacalin protein for treatment or prevention conjunctivitis) 329085-08-7 329085-10-1 329085-11-2 IT RL: PRP (Properties) (unclaimed sequence; use of histacalin protein for treatment or prevention of conjunctivitis) L30 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2003 ACS on STN 1999:374997 HCAPLUS ACCESSION NUMBER: DOCUMENT NUMBER: 131:154999 Tick histamine-binding proteins: isolation, cloning, TITLE: and three-dimensional structure Paesen, G. C.; Adams, P. L.; Harlos, K.; Nuttall, P. AUTHOR(S): A.; Stuart, D. I. Institute of Virology and Environmental Microbiology, CORPORATE SOURCE: Natural Environment Research Council, Oxford, OX1 3SR, Molecular Cell (1999), 3(5), 661-671 SOURCE: CODEN: MOCEFL: ISSN: 1097-2765 Cell Press **PUBLISHER:** Journal DOCUMENT TYPE: English LANGUAGE: High-affinity histamine-binding proteins (HBPs) were discovered in the saliva of Rhipicephalus appendiculatus ticks. Their ability to outcompete histamine receptors indicates that they suppress inflammation during blood feeding. The crystal structure of a histamine-bound HBP, detd. at 1.25 .ANG. resoln., reveals a lipocalin fold novel in contg. two binding sites for the same ligand. The sites are orthogonally arranged and highly rigid and form an internal surface of unusual polar character that complements the physicochem, properties of histamine. As sol, receptors of histamine, HBPs offer a new strategy for controlling histamine-based diseases. 200220-32-2 200220-33-3 200220-34-4 IT RL: PRP (Properties) (amino acid sequence; isolation, cloning, mol. characterization and three-dimensional structure of sex-specific tick histamine-binding proteins) 200220-32-2 HCAPLUS CN Protein FS-HBP1 (Rhipicephalus appendiculatus female-specific histamine-binding) (9CI) (CA INDEX NAME) *** STRUCTURE DIAGRAM IS NOT AVAILABLE *** RN 200220-33-3 HCAPLUS Protein FS-HBP2 (Rhipicephalus appendiculatus female-specific CN histamine-binding) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

```
200220-34-4 HCAPLUS
RN
     Protein MS-HBP1 (Rhipicephalus appendiculatus male-specific
CN
     histamine-binding) (9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
     6-3 (General Biochemistry)
CC
     Section cross-reference(s): 3, 12
     Rhipicephalus histamine binding protein structure; cDNA sequence tick
ST
     histamine binding protein
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BOC (Biological
     occurrence); BSU (Biological study, unclassified); PRP (Properties); BIOL
     (Biological study); OCCU (Occurrence)
        (HBP (histamine-binding proteins); isolation, cloning, mol.
        characterization and three-dimensional structure of sex-specific tick
        histamine-binding proteins)
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BOC (Biological
     occurrence); BSU (Biological study, unclassified); PRP (Properties); BIOL
     (Biological study); OCCU (Occurrence)
        (HBP-1 (histamine-binding protein
        1); isolation, cloning, mol. characterization and
        three-dimensional structure of sex-specific tick histamine-binding
        proteins)
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BOC (Biological
     occurrence); BSU (Biological study, unclassified); PRP (Properties); BIOL
     (Biological study); OCCU (Occurrence)
        (HBP-2 (histamine-binding protein
        2); isolation, cloning, mol. characterization and
        three-dimensional structure of sex-specific tick histamine-binding
        proteins)
IT
     Crystal structure
     Protein sequences
     Rhipicephalus appendiculatus
     cDNA sequences
        (isolation, cloning, mol. characterization and three-dimensional
        structure of sex-specific tick histamine-binding proteins)
IT
     Tertiary structure
        (protein; isolation, cloning, mol. characterization and
        three-dimensional structure of sex-specific tick histamine-binding
        proteins)
IT
     200220-32-2 200220-33-3 200220-34-4
     RL: PRP (Properties)
        (amino acid sequence: isolation, cloning, mol. characterization and
        three-dimensional structure of sex-specific tick histamine-binding
     51-45-6, Histamine, biological studies
IT
     RL: BPR (Biological process); BSU (Biological study, unclassified); PRP
     (Properties); BIOL (Biological study); PROC (Process)
        (isolation, cloning, mol. characterization and three-dimensional
        structure of sex-specific tick histamine-binding proteins)
                                  200220-29-7, GenBank U96081 200220-30-0,
     200220-28-6, GenBank U96080
IT
     GenBank U96082
     RL: PRP (Properties)
        (nucleotide sequence; isolation, cloning, mol. characterization and
        three-dimensional structure of sex-specific tick histamine-binding
        proteins)
                         48
                               THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS
REFERENCE COUNT:
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
```

L30 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2003 ACS on STN ACCESSION NUMBER: 1999:359659 HCAPLUS 131:28315 DOCUMENT NUMBER: Cloning and functions of vasoactive amine-binding TITLE: proteins from ticks INVENTOR(S): Nuttall, Patricia Ann; Paesen, Guido Christian PATENT ASSIGNEE(S): Oxford Vacs Ltd., UK SOURCE: PCT Int. Appl., 84 pp. CODEN: PIXXD2 DOCUMENT TYPE: Patent LANGUAGE: English FAMILY ACC. NUM. COUNT: PATENT INFORMATION: APPLICATION NO. DATE PATENT NO. KIND DATE 19990603 WO 1998-GB3530 19981126 WO 9927104 A1 W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG CA 2309809 AA 19990603 CA 1998-2309809 19981126 AU 9912511 19990615 AU 1999-12511 19981126 **A1** EP 1034273 20000913 EP 1998-955786 19981126 A1 AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, RO BR 9815056 20001003 BR 1998-15056 19981126 Α 20020326 JP 2000-522246 19981126 JP 2002508927 . T2 NZ 504753 20021126 NZ 1998-504753 19981126 Α PRIORITY APPLN. INFO.: GB 1997-25046 A 19971126 GB 1998-13917 Α 19980626 WO 1998-GB3530 W 19981126 The present invention relates to histamine and serotonin binding mols. ΑB that possess a binding site with the precise mol. configuration that is necessary to confer on the mol. a high affinity for histamine. The invention includes proteins, peptides and chem. compds. that possess this mol. configuration and that are thus able to bind to histamine with high affinity. These mols. may be used in the regulation of the action of histamine or serotonin, the detection and quantification or histamine or serotonin and in the treatment of various diseases and allergies. The mols. may also be used as components of vaccines directed against blood-sucking ectoparasites. Vasoactive amine binding proteins (VABPs) are provided that specifically bind to vasoactive amines with a dissocn. const. of <10-7 M and which belong to the same protein family as MS-HBP1, FS-HBP1, FS-HBP2 and D.RET6. Thus, 11 VASPs were isolated, and their cDNAs cloned and sequenced, from ticks: FS-HBP1 (female-specific histamine-binding protein 1), FS-HBP2 (female-specific histamine-binding protein 2), MS-HBP1 (male-specific histaminebinding protein 1), and Ra-Res from Rhipicephalus appendiculatus; D.RET6 from Dermacenter reticularis; Av-HBP from Amblyomma variegatum; and 5 related Ih/Bm-HBP

proteins from a mixed Ixodes hexagonus/Boophilus microplus cDNA expression

library. These VASPs possess similar amino acid sequences and predicted secondary structures. The VASPs bind histamine in mammals, and can be used as anti-inflammatory agents to regulate histamine action and to control its pathol. effects. The crystal structure of FS-HBP2 to 2.24 .ANG. resoln. was used to design a synthetic cyclic octapeptide ('Ala-Glu-Ala-Phe-Ala-Glu-Ala-Trp-) with histamine binding activity. 200220-32-2 200220-33-3 200220-34-4 200220-35-5 226891-31-2 226891-34-5

IT 226891-36-7 226891-37-8 226891-38-9 226891-39-0 226891-40-3

> RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses) (amino acid sequence; cloning and functions of vasoactive amine-binding proteins from ticks)

200220-32-2 HCAPLUS RN

- Protein FS-HBP1 (Rhipicephalus appendiculatus female-specific CN histamine-binding) (9CI) (CA INDEX NAME)
- *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

200220-33-3 HCAPLUS RN

- Protein FS-HBP2 (Rhipicephalus appendiculatus female-specific CN histamine-binding) (9CI) (CA INDEX NAME)
- *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

200220-34-4 HCAPLUS RN

- Protein MS-HBP1 (Rhipicephalus appendiculatus male-specific CN histamine-binding) (9CI) (CA INDEX NAME)
- *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

200220-35-5 HCAPLUS RN

- Protein D.RET6 (Dermacenter reticularis histamine-binding) (9CI) (CA CN INDEX NAME)
- *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 226891-31-2 HCAPLUS

- Histamine-binding protein Ra-Res (Rhicephalus appendiculatus) (9CI) (CA CN INDEX NAME)
- *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 226891-34-5 HCAPLUS

- Histamine-binding protein Av-HBP (Amblyomma variegatum) (9CI) (CA INDEX CN
- *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 226891-36-7 HCAPLUS

- Histamine-binding protein Ih/Bm-HBP1 (Boophilus microplus/Ixodes CN hexagonus) (9CI) (CA INDEX NAME)
- *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN . 226891-37-8 HCAPLUS

- Histamine-binding protein Ih/Bm-HBP2 (Boophilus microplus/Ixodes CN hexagonus) (9CI) (CA INDEX NAME)
- *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

226891-38-9 HCAPLUS RN

Histamine-binding protein Ih/Bm-HBP3 (Boophilus microplus/Ixodes CN hexagonus) (9CI) (CA INDEX NAME)

113 PAGE BLANK (USPTO)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 226891-39-0 HCAPLUS

CN Histamine-binding protein Ih/Bm-HBP4 (Boophilus microplus/Ixodes hexagonus) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 226891-40-3 HCAPLUS

CN Histamine-binding protein Ih/Bm-HBP5 (Boophilus microplus/Ixodes hexagonus) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 226219-91-6

RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses) (cloning and functions of vasoactive amine-binding proteins from ticks)

RN 226219-91-6 HCAPLUS

CN Cyclo(L-alanyl-L-alpha.-glutamyl-L-alanyl-L-phenylalanyl-L-alanyl-L-alanyl-L-alanyl-L-tryptophyl) (9CI) (CA INDEX NAME)

Absolute stereochemistry.

PAGE 1-B

```
IC
    ICM C12N015-21
    ICS C07K014-435; A61K038-17; A61K031-40; A61K031-19; A61K031-66;
          A61K031-35; G01N033-68; A23L001-015; C12N005-10; C12N001-21;
          A01K067-027; C12N015-00
    2-8 (Mammalian Hormones)
CC
     Section cross-reference(s): 1, 3, 6, 12, 75
ST
     vasoactive amine binding protein tick; histamine binding protein tick;
     Rhipicephalus vasoactive amine binding protein; Dermacenter vasoactive
     amine binding protein; Amblyomma vasoactive amine binding protein;
     Boophilus vasoactive amine binding protein; Ixodes vasoactive amine
     binding protein; sequence vasoactive binding protein cDNA tick;
     inflammation inhibitor VASP protein tick
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (D.RET6; cloning and functions of vasoactive
        amine-binding proteins from ticks)
IT
     Proteins, specific or class
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (FS-HBP1 (female-specific histamine-
        binding protein 1); cloning and functions
        of vasoactive amine-binding proteins from ticks)
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (FS-HBP2 (female-specific histamine-
        binding protein 2); cloning and functions
        of vasoactive amine-binding proteins from ticks)
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (Ih/Bm-HBP (Ixodes hexagonus/Boophilus microplus histamine-binding
        protein); cloning and functions of vasoactive amine-binding proteins
        from ticks)
     Proteins, specific or class
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (MS-HBP1 (male-specific histamine-
        binding protein 1); cloning and functions
        of vasoactive amine-binding proteins from ticks)
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (VASP (vasoactive amine-binding protein); cloning and functions of
        vasoactive amine-binding proteins from ticks)
     Amines, biological studies
IT
     RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL
     (Biological study); PROC (Process)
        (biogenic, vasoactive; cloning and functions of vasoactive
        amine-binding proteins from ticks)
IT
     5-HT antagonists
     Amblyomma variegatum
```

```
Anti-inflammatory agents
    Antihistamines
    Boophilus microplus
    Dermacentor reticulatus
    Ixodes hexagonus
    Mite and Tick
    Molecular cloning
    Rhipicephalus appendiculatus
    Scorpion
    Snake
     Spider
     Transformation, genetic
     Vaccines
        (cloning and functions of vasoactive amine-binding proteins from ticks)
    Fusion proteins (chimeric proteins)
ΙT
    RL: BPN (Biosynthetic preparation); THU (Therapeutic use); BIOL
     (Biological study); PREP (Preparation); USES (Uses)
        (cloning and functions of vasoactive amine-binding proteins from ticks)
     Peptides, biological studies
    RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (cyclic; cloning and functions of vasoactive amine-binding proteins
        from ticks)
IT
     Parasite
        (ecto-; cloning and functions of vasoactive amine-binding proteins from
        ticks)
IT
     cDNA sequences
        (for vasoactive amine-binding proteins from ticks)
IT
     Food analysis
     Plant analysis
        (histamine detn. in; cloning and functions of vasoactive amine-binding
        proteins from ticks)
IT
    Diagnosis
        (mol.; cloning and functions of vasoactive amine-binding proteins from
        ticks)
IT
    Crystal structure
        (of histamine-binding protein FS-HBP2; cloning and
        functions of vasoactive amine-binding proteins from ticks)
IT
    Protein sequences
        (of vasoactive amine-binding proteins from ticks)
IT
        (protein, of histamine-binding protein FS-HBP2;
        cloning and functions of vasoactive amine-binding proteins from ticks)
IT
        (quantification of histamine levels in body fluids; cloning and
        functions of vasoactive amine-binding proteins from ticks)
     200220-32-2 200220-33-3 200220-34-4
IT
     200220-35-5 226891-31-2 226891-34-5
     226891-36-7 226891-37-8 226891-38-9
     226891-39-0 226891-40-3
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (amino acid sequence; cloning and functions of vasoactive amine-binding
        proteins from ticks)
     50-67-9, Serotonin, biological studies
IT
                                             51-45-6, Histamine, biological
               501-75-7, 1-Methylhistamine 644-42-8, 3-Methylhistamine
     RL: ANT (Analyte); BPR (Biological process); BSU (Biological study,
     unclassified); ANST (Analytical study); BIOL (Biological study); PROC
```

```
(Process)
       (cloning and functions of vasoactive amine-binding proteins from ticks)
    226219-91-6
IT
    RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (cloning and functions of vasoactive amine-binding proteins from ticks)
    200220-28-6P
                   200220-29-7P
                                   200220-30-0P
                                                 200220-31-1P
                                                                226890-87-5P
IT
                   226890-97-7P
                                   226890-98-8P
                                                  226891-00-5P
                                                                226891-16-3P
     226890-96-6P
     226927-07-7P
    RL: BPN (Biosynthetic preparation); PRP (Properties); THU (Therapeutic
     use); BIOL (Biological study); PREP (Preparation); USES (Uses)
        (nucleotide sequence; cloning and functions of vasoactive amine-binding
       proteins from ticks)
                               THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS
REFERENCE COUNT:
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
L30 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2003 ACS on STN
                         1997:776255 HCAPLUS
ACCESSION NUMBER:
                         128:57765
DOCUMENT NUMBER:
TITLE:
                         Cloning and functions of vasoactive amine-binding
                         proteins from ticks
                         Paesen, Guido Christian; Nuttall, Patricia Ann
INVENTOR(S):
                         Oxford Vacs Ltd., UK; Paesen, Guido Christian;
PATENT ASSIGNEE(S):
                         Nuttall, Patricia Ann
                         PCT Int. Appl., 44 pp.
SOURCE:
                         CODEN: PIXXD2
DOCUMENT TYPE:
                         Patent
LANGUAGE:
                         English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:
     PATENT NO.
                     KIND DATE
                                          APPLICATION NO. DATE
     -----
                     ,A2
                           19971127
                                          WO 1997-GB1372 19970519
     WO 9744451
                           19980219
     WO 9744451
                     Α3
        W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
            DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ,
            LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL,
            PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ,
            VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
        RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB,
            GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN,
            ML, MR, NE, SN, TD, TG
                          19971127
                                           CA 1997-2253924 19970519
     CA 2253924
                      AA
     AU 9729071
                      A1
                            19971209
                                           AU 1997-29071
                                                            19970519
                     ' B2
     AU 725630
                            20001019
                                           EP 1997-923204
                                                            19970519
     EP 906425
                      Α2
                           19990407
        R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, FI, RO
                            19990803
                                           BR 1997-9101 · 19970519
     BR 9709101
     CN 1225683
                       Α
                            19990811
                                           CN 1997-196317
                                                           19970519
                                                           19970519
                                           NZ 1997-332648
     NZ 332648
                       Α
                            20000526
                                           JP 1997-541799
                                                            19970519
     JP 2000512489
                      T2
                            20000926
                                        GB 1996-10484
                                                      A 19960518
PRIORITY APPLN. INFO.:
                                        GB 1997-7844
                                                         Α
                                                           19970418
                                       WO 1997-GB1372
                                                        W 19970519
     Vasoactive amine binding proteins (VABPs) are provided that specifically
AB
     bind to vasoactive amines with a dissocn. const. of <10-7 M and which
```

belong to the same protein family as MS-HBP1,

```
FS-HBP1, FS-HBP2 and D.
    RET6. Thus, 4 VASPs were isolated, and their cDNAs cloned and
    sequenced, from ticks: FS-HBP1 (female-specific
    histamine-binding protein 1),
    FS-HBP2 (female-specific histamine-
    binding protein 2), and MS-
    HBP1 (male-specific histamine-binding
    protein 1) from Rhipicephalus appendiculatus; and
    D.RET6 from Dermacenter reticularis. These 4 VASPs
    possess similar amino acid sequences and predicted secondary structures.
    The VASPs bind histamine in mammals, and can be used as anti-inflammatory
    agents to regulate histamine action and to control its pathol. effects.
    200220-32-2 200220-33-3 200220-34-4
IT
    200220-35-5
    RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (amino acid sequence; cloning and functions of vasoactive amine-binding
        proteins from ticks)
RN
     200220-32-2 HCAPLUS
CN
     Protein FS-HBP1 (Rhipicephalus appendiculatus female-specific
    histamine-binding) (9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
    200220-33-3 HCAPLUS
RN
    Protein FS-HBP2 (Rhipicephalus appendiculatus female-specific
CN
    histamine-binding) (9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
    200220-34-4 HCAPLUS
RN
     Protein MS-HBP1 (Rhipicephalus appendiculatus male-specific
CN
    histamine-binding) (9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
    200220-35-5 HCAPLUS
RN
    Protein D.RET6 (Dermacenter reticularis histamine-binding) (9CI) (CA
CN
    INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC
    ICM C12N015-12
     ICS C12N015-86; A01K067-027; A61K038-17; C12N005-10; G01N033-68;
          C12N015-62; C07K014-435
    2-8 (Mammalian Hormones)
CC
     Section cross-reference(s): 1. 3
    vasoactive amine binding protein tick; histamine binding protein tick;
ST
     Rhipicephalus vasoactive amine binding protein; Dermacenter vasoactive
     amine binding protein; sequence vasoactive binding protein cDNA tick;
     inflammation inhibitor VASP protein tick
IT Proteins, specific or class
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (D.RET6; cloning and functions of vasoactive
        amine-binding proteins from ticks)
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (FS-HBP1 (female-specific histamine-
        binding protein 1); cloning and functions
```

```
of vasoactive amine-binding proteins from ticks)
    Proteins, specific or class
TT
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (FS-HBP2 (female-specific histamine-
        binding protein 2); cloning and functions
        of vasoactive amine-binding proteins from ticks)
     Proteins, specific or class
IT
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (MS-HBP1 (male-specific histamine-
        binding protein 1); cloning and functions
        of vasoactive amine-binding proteins from ticks)
IT
     Proteins, specific or class
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (VASP (vasoactive amine-binding protein); cloning and functions of
        vasoactive amine-binding proteins from ticks)
    Amines, biological studies
IT
     RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL
     (Biological study); PROC (Process)
        (biogenic, vasoactive; cloning and functions of vasoactive
        amine-binding proteins from ticks)
IT
     Anti-inflammatory agents
    Antihistamines
     Dermacentor reticulatus
     Mite and Tick
     Molecular cloning
     Rhipicephalus appendiculatus
     Scorpion
     Snake
     Spider
     Transformation, genetic
     Vaccines
        (cloning and functions of vasoactive amine-binding proteins from ticks)
     Fusion proteins (chimeric proteins)
     RL: BPN (Biosynthetic preparation); THU (Therapeutic use); BIOL
     (Biological study); PREP (Preparation); USES (Uses)
        (cloning and functions of vasoactive amine-binding proteins from ticks)
IT
        (ecto-; cloning and functions of vasoactive amine-binding proteins from
        ticks)
IT
     cDNA sequences
        (for vasoactive amine-binding proteins from ticks)
IT
     Protein sequences
        (of vasoactive amine-binding proteins from ticks)
     Body fluid
IT
        (quantification of histamine levels in body fluids; cloning and
        functions of vasoactive amine-binding proteins from ticks)
     200220-32-2 200220-33-3 200220-34-4
IT
     200220-35-5
     RL: BAC (Biological activity or effector, except adverse); BPR (Biological
     process); BSU (Biological study, unclassified); PRP (Properties); THU
     (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
        (amino acid sequence; cloning and functions of vasoactive amine-binding
        proteins from ticks)
     51-45-6, Histamine, biological studies
IT
```

RL: ANT (Analyte); BPR (Biological process); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); PROC (Process)

(cloning and functions of vasoactive amine-binding proteins from ticks)
IT 200220-28-6P 200220-29-7P 200220-30-0P 200220-31-1P
RL: BPN (Biosynthetic preparation); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)

(nucleotide sequence; cloning and functions of vasoactive amine-binding proteins from ticks)

(nucleotide sequence; high affinity serotonin- and histamine-binding

lipocalin sequence and identification from tick saliva)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 4 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER:

2001:8145 HCAPLUS

DOCUMENT NUMBER:

134:128741

TITLE:

Nitrophorins and related antihemostatic lipocalins from Rhodnius prolixus and other blood-sucking

arthropods

AUTHOR(S):

Montfort, William R.; Weichsel, Andrzej; Andersen,

John F.

CORPORATE SOURCE:

Department of Biochemistry, University of Arizona,

Tucson, AZ, 85721, USA

SOURCE:

Biochimica et Biophysica Acta (2000), 1482(1-2),

110-118

CODEN: BBACAQ; ISSN: 0006-3002

PUBLISHER: DOCUMENT TYPE:

Elsevier Science B.V. Journal; General Review

LANGUAGE: English

AB A review, with 53 refs. Recent gene sequence and crystal structure detns. of salivary proteins from several blood-sucking arthropods have revealed an unusual evolutionary relationship: many such proteins derive their functions from lipocalin protein folds. Many blood-sucking arthropods have independently evolved the ability to overcome a host organism's means of preventing blood loss (called hemostasis). Most blood feeders have proteins that induce vasodilation, inhibit blood coagulation, and reduce inflammation, but do so by distinctly different mechanisms. Despite this diversity, in many cases the antihemostatic activities in such organisms reside in proteins with lipocalin folds. Thirteen such lipocalins are described in this review, with a particular focus on the heme-contg. nitrophorins from R. prolixus, which transport nitric oxide, sequester histamine, and disrupt blood coagulation. Also described are the anti-platelet compds. RPAI, moubatin, and pallidipin from R. prolixus, Ornithodoros moubata, and Triatoma pallidipennis; the antithrombin protein triabin from T. pallidipennis; and the tick histamine binding proteins from Rhipicephalus appendiculatus.

CC 12-0 (Nonmammalian Biochemistry) Section cross-reference(s): 6

ST review blood sucking arthropod nitrophorin lipocalin

IT Arthropod (Arthropoda)

(blood-sucking; nitrophorins and related antihemostatic lipocalins from Rhodnius prolixus and other blood-sucking arthropods)

IT Proteins, specific or class

RL: BAC (Biological activity or effector, except adverse); BOC (Biological occurrence); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)

(lipocalins; nitrophorins and related antihemostatic lipocalins from Rhodnius prolixus and other blood-sucking arthropods)

IT Rhodnius prolixus

Salivary gland

(nitrophorins and related antihemostatic lipocalins from Rhodnius prolixus and other blood-sucking arthropods)

IT Proteins, specific or class

RL: BAC (Biological activity or effector, except adverse); BOC (Biological occurrence); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)

(nitrophorins; nitrophorins and related antihemostatic lipocalins from Rhodnius prolixus and other blood-sucking arthropods)

REFERENCE COUNT: 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 5 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER:

2001:8143 HCAPLUS

DOCUMENT NUMBER:

134:128740

TITLE:

Tick histamine-binding

proteins: lipocalins with a second binding

cavity

AUTHOR(S):

Paesen, Guido C.; Adams, Peter L.; Nuttall, Patricia

A.; Stuart, David L.

CORPORATE SOURCE:

CEH Institute of Virology and Environmental

Microbiology, Oxford, OX1 3SR, UK

SOURCE:

Biochimica et Biophysica Acta (2000), 1482(1-2),

92-101

CODEN: BBACAQ; ISSN: 0006-3002

PUBLISHER: DOCUMENT TYPE:

Elsevier Science B.V. Journal; General Review

LANGUAGE: English

AB A review, with 26 refs. Tick histamine-binding

proteins (HBPs) are lipocalins with 2 binding pockets. One of these binds histamine with a high affinity and is found at the position expected from other lipocalins, adjacent to the .OMEGA.-loop at the open-end of the .beta.-barrel. A 2nd binding cavity, which is a low-affinity site for histamine in 1 of the HBPs, is located at the end of the barrel that is closed off in other lipocalins. To create the 2nd site, the closed-end region has undergone a major reconstruction. Typical lipocalin characteristics, such as the 310 helix and a structural cluster of highly conserved residues, have been lost, while an .alpha.-helix now shields the cavity from the exterior. The prominence of acidic residues

in the binding pockets is another distinctive characteristic of HBPs. Whereas most lipocalins have highly hydrophobic binding cavities designed to bind lipophilic compds., HBPs have evolved to trap cationic,

hydrophilic mols.

CC 12-0 (Nonmammalian Biochemistry)
Section cross-reference(s): 6

ST review tick histamine binding protein

IT Proteins, specific or class

RL: BOC (Biological occurrence); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)

(histamine-binding; tick histamine-binding

proteins)

IT Mite and Tick

(tick histamine-binding proteins)

REFERENCE COUNT:

THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 6 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER:

1994:236350 HCAPLUS

DOCUMENT NUMBER:

120:236350

TITLE:

Purification of histamine receptor proteins from

detergent-solubilized human peripheral blood

mononuclear cells

AUTHOR(S):

Warlow, Robert S.; Rajasekariah, Poornima; Lambert, Paul; Morgan, Janelle; Dao, Lan Phuong; Bernard,

Claude C. A.; Walls, Ronald S.

CORPORATE SOURCE:

Immunology Department, Concord Repatriation Hospital.

Sydney, Australia

SOURCE:

Biochemistry (1994), 33(16), 4800-11

CODEN: BICHAW; ISSN: 0006-2960

DOCUMENT TYPE:

Journal

LANGUAGE:

Enalish

Histamine is released from mast cells and basophils by either immunol. or nonimmunol. mechanisms. Histamine, which is the most potent short acting mediator released from these cells, exerts its diverse biol. actions by binding to cell surface histamine receptors. The authors report the affinity purifn. of histamine receptor proteins from Triton X-100 solubilized peripheral human blood mononuclear cells which include lymphocytes and monocytes. Three different designs of histamine affinity columns were constructed; all three resulted in the same material being eluted. This consisted of bands which on SDS-PAGE after boiling and redn. had the following mol. wts.: 193K, 84K, 58K, 48K, 37K, and 16K. The most abundant bands were of mol. wts. 193K, 48K, and 16K, and these were disulfide bonded together to form a high mol. wt. complex. The 58K band was present in lower amts. than the others, and in only a few fractions. It had the same mol. wt. as the dimeric form of histamine methyltransferase which is present in small amts. in mononuclear cells and may therefore have copurified. The histamine binding proteins described in this report were purified by conventional affinity chromatog., rather than by an expression cloning approach which obviates the use of any protein chem. Consequently, the authors had the advantage of being able to verify the histamine binding specificity of the purified proteins directly and with several independent assays as follows. The histamine binding specificity of all three columns was established by specific elution with histamine, by preabsorption of crude cell ext. with excess free histamine prior to column application, and by comparison with control columns. Independent detn. of the binding specificity, using a radioreceptor dot blot assay, of the eluate contg. only the 193K, 48K, and 16K disulfide-linked subunits confirmed that the purified material bound specifically to [3H]histamine and that a 300-500-fold degree of purifn. from tissue ext. had been obtained. Following cell surface radioreceptor crosslinking of radiolabeled histamine to intact mononuclear cells, the 16K band was detected, indicating it to be the ligand-binding subunit for histamine. These same three proteins were purified from T lymphocyte and monocytoid cell lines, indicating that both lymphocyte and monocyte subsets of mononuclear cells express these proteins. The trimol. structure, consisting of 193K, 48K, and 16K subunits appears to be a novel histamine cell surface receptor protein complex as the mol. wts. of the 193K, 48K, and 16K bands bore no relation to the predicted mol. wts. of the recently expression cloned H1 receptor gene derived from bovine adrenal and H2 receptor gene derived from human parietal cells; this may reflect receptor heterogeneity within a tissue, between tissues, and/or between species.

CC2-2 (Mammalian Hormones)

histamine receptor mononuclear cell purifn characterization; affinity ST chromatog histamine receptor mononuclear cell; lymphocyte histamine receptor purifn characterization; monocyte histamine receptor purifn characterization; structure histamine receptor mononuclear cell

IT Monocyte

(histamine receptors of human, purifn. and characterization of)

IT Cell membrane

(histamine receptors of, of human blood mononuclear cells, purifn. and characterization of)

Conformation and Conformers IT

Disulfide group

(of histamine receptors, of human blood mononuclear cells)

IT Lymphocyte

(T-cell, histamine receptors of human, purifn. and characterization of)

IT Chromatography, column and liquid

(affinity, of histamine receptors, of human blood mononuclear cells)

```
IT
    Receptors
     RL: BIOL (Biological study)
        (histaminic, of blood mononuclear cells, of human, purifn. and
        characterization of)
    Leukocyte
IT
        (mononuclear, histamine receptors of human, purifn. and
        characterization of)
     51-45-6P, Histamine, biological studies
IT
     RL: BIOL (Biological study); PREP (Preparation)
        (receptor binding of, after purifn. from human blood mononuclear cells)
L32 ANSWER 7 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN
                         1991:421847 HCAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         115:21847
                         Histaglobulin and changes in conjunctival structure in
TITLE:
                         vernal conjunctivitis
                         Volokhovskaya, Z. P.; Kadyrova, M. Ya.
AUTHOR(S):
                         Turk. NII Glazn. Bolezn., Ashkhabad, USSR
CORPORATE SOURCE:
                         Zdravookhranenie Turkmenistana (1990), (10), 15-18
SOURCE:
                         CODEN: ZDTUAB; ISSN: 0513-8736
DOCUMENT TYPE:
                         Journal
LANGUAGE:
                         Russian
     The histochem. effects of 2-3-wk course treatment with histaglobin
     (histamine-binding globulin) on eye conjunctiva were studied in humans
     suffering from spring allergic conjunctivitis. The treatment decreased
     infiltration with basophils responsible for amine release and allergic
     symptoms.
     1-7 (Pharmacology)
     Section cross-reference(s): 15
     allergic conjunctivitis histochem histaglobulin histamine binding;
    histamine binding protein allergic
     conjunctivitis histochem
     Proteins, specific or class
IT
     RL: BIOL (Biological study)
        (histamine-binding, allergic spring conjunctivitis histochem. response
        to treatment with, in humans)
     Eye, disease or disorder
IT
        (vernal conjunctivitis, histaglobin treatment effects on histochem. of,
        in humans)
L32 ANSWER 8 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER:
                         1981:404871 HCAPLUS
DOCUMENT NUMBER:
                         95:4871
                         Histamine binding proteins
TITLE:
                         separated from human serums by the chromatographic
                         method
                         Chachaj, Wladyslaw; Bartecka, Zuzanna; Malolepszy,
AUTHOR(S):
CORPORATE SOURCE:
                         Dep. Intern. Dis., Inst. Intern. Dis., Wroclaw, Pol.
                         Archivum Immunologiae et Therapiae Experimentalis
SOURCE:
                         (1980), 28(6), 947-51
                         CODEN: AITEAT; ISSN: 0004-069X
DOCUMENT TYPE:
                         Journal
                         Enalish
LANGUAGE:
     Human serum proteins were bound on and eluted from Sepharose-polylysine-
     histamine column. Thus obtained protein fraction was referred to as HBP (
     histamine-binding protein). HBPs were examd.
     for the ability to bind histamine by biol. method applied to isolated
     guinea pig intestine. Chromatog. sepns. were run on DEAE cellulose column
     to obtain HBPs which are directly responsible for histamine-binding
```

```
activity. The results suggest that human serum contains 3 HBP fractions.
     One of them was identified as orosomucoid, and the 2 remaining ones seem
     to be glycoproteins belonging to .alpha.1 globulin group.
CC
     15-1 (Immunochemistry)
     histamine binding protein chromatog
ST
     Blood serum
IT
        (histamine-binding proteins of)
    Allergy
IT
        (histamine-binding proteins of blood
        serum in relation to)
     51-45-6, biological studies
IT
     RL: BIOL (Biological study)
        (proteins binding, of blood serum)
L32 ANSWER 9 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN
                         1979:536384 HCAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         91:136384
                         Application of affinity chromatography in binding of
TITLE:
                         histamine to serum proteins
                         Bartecka, Z.; Chachaj, W.; Malepszy, J.
AUTHOR(S):
                         Inst. Intern. Med., Med. Acad. Wroclaw, Wroclaw, Pol.
CORPORATE SOURCE:
                         Agents and Actions (1979), 9(1), 35-7
SOURCE:
                         CODEN: AGACBH; ISSN: 0065-4299
DOCUMENT TYPE:
                         Journal
                         English
LANGUAGE:
     Serum histamine (I)-binding proteins (HBP) were isolated by affinity
     chromatog. on polylysine-Sepharose 4B-immobilized histamine (II) and
     characterized by electrophoresis. Dialyzed serum proteins were incubated
     with a suspension of carrier II for 2 h at 37.degree., and the carrier
     then was packed in a column, washed with 0.9% NaCl to remove unbound
     proteins, and eluted with 0.2M EDTA and 6M urea to remove HBP.
     Polyacrylamide gel electrophoresis in the presence of 0.2% Na dodecyl
     sulfate sepd. 8 HBP fractions with mol. wts. in the range 80,000-350,000.
     A bioassay with isolated guinea pig intestine was used to det. I and to
     study its inactivation at various HBP concns.
     9-2 (Biochemical Methods)
CC
     serum histamine binding protein sepn;
ST
     affinity chromatog histamine binding protein
IT
     Blood analysis
        (histamine-binding proteins affinity
        chromatog. in)
     Chromatography, column and liquid
IT
        (affinity, of histamine-binding proteins)
IT
     Proteins
     RL: PROC (Process)
        (histamine-binding, affinity chromatog. of, of blood serum)
     9012-36-6D, reaction product with poly-L-lysine
IT
     RL: ANST (Analytical study)
        (histamine immobilization on, for histamine-binding
        proteins affinity chromatog.)
     51-45-6, biological studies
IT
     RL: BIOL (Biological study)
        (proteins binding, affinity chromatog. of, of blood serum)
L32 ANSWER 10 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN
                         1978:35352 HCAPLUS
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         88:35352
                         Histamine and serotonin content in patients with newly
TITLE:
                         identified tuberculosis of the lungs complicated by
                         nonspecific endobronchitis
```

```
Shesterina, M. V.; Mikhailova, Yu. V.; Andrzheyuk, N.
AUTHOR(S):
                          I.; Elistratova, N. A.
                          Mosk. Nauchno-Issled. Inst. Tuberk., Moscow, USSR
CORPORATE SOURCE:
SOURCE:
                          Problemy Tuberkuleza (1977), (9), 36-9
                          CODEN: PRTUAX; ISSN: 0032-9533
DOCUMENT TYPE:
                          Journal
                          Russian
LANGUAGE:
     In 50 adult patients with tuberculosis and nonspecific endobronchitis, the
     blood levels of histamine and serotonin increased and those of
     histamine-binding protein decreased 2-, 1.5-
     and 5-fold, resp., in the patients without microflora in the bronchi and
     1.4-, 1.5-, and 2-fold, resp., in the patients with addnl. microflora in the bronchi as compared with those of normal subjects. After treatment with antibiotics and antihistamines or corticosteroids, the levels usually
     normalized.
     14-1 (Mammalian Pathological Biochemistry)
CC
     histamine serotonin blood tuberculosis; bronchitis microorganism
     tuberculosis; protein serum histamine binding endobronchitis
IT
        (blood compn. in, endobronchitis in relation to)
     Proteins
IT
     RL: BIOL (Biological study)
        (histamine-binding, of blood in tuberculosis and endobronchitis)
IT
     Bronchi
        (disease, endobronchitis, blood compn. in tuberculosis in relation to)
                                     51-45-6, biological studies
     50-67-9, biological studies
     RL: BIOL (Biological study)
        (of blood, in tuberculosis and endobronchitis)
L32 ANSWER 11 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER:
                          1975:81859 HCAPLUS
DOCUMENT NUMBER:
                          82:81859
TITLE:
                          Histamine-serum protein bond
                          Kochman, S.; Jalouzot, R.; Maujean, A.; Cazabat, A.;
AUTHOR(S):
                          Dubois de Montreynaud, J. M.
                          Serv. Pneumophisiologie, Cent. Hosp. Univ., Reims, Fr.
CORPORATE SOURCE:
SOURCE:
                          Nouvelle Presse Medicale (1974), 3(30), 1883
                          CODEN: NPMDAD: ISSN: 0301-1518
DOCUMENT TYPE:
                          Journal
                          French
LANGUAGE:
     Gel chromatog, of normal human serum on a histamine-fixed, CNBr-activated
     Sepharose 4B column adsorbed the histaminoplexic compd. of the serum.
     Elution with 6M quanidine-HCl yielded a protein (max. uv absorbance at280
     nm). Na dodecyl sulfate-polyacrylamide gel electrophoresis showed only 2
     bands. Thus, the presence of a histamine-binding
     protein in blood serum is confirmed.
CC
     6-3 (General Biochemistry)
     blood serum protein histamine binding
ST
IT
     Proteins
     RL: BIOL (Biological study)
        (blood-serum, histamine binding by)
IT
     51-45-6, biological studies
     RL: BIOL (Biological study)
        (protein binding, of blood serum)
L32 ANSWER 12 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN
                          1974:502483 HCAPLUS
ACCESSION NUMBER:
                          81:102483
DOCUMENT NUMBER:
                          New aspects of histaminopexy
TITLE:
AUTHOR(S):
                          Lonovics, J.; Gecse, A.; Karady, S.
```

CORPORATE SOURCE:

Inst. Pathophysiol., Univ. Sch. Med., Szeged, Hung.

SOURCE:

Archives Internationales de Physiologie et de

Biochimie (1974), 82(1), 41-7 CODEN: AIPBAY; ISSN: 0003-9799

DOCUMENT TYPE: LANGUAGE:

Journal English

AB The mechanism of formation and release of histaminopexic peptide was studied in the rat. Detns. were carried out with plasma and serum which were first subjected to gel filtration on Sephadex G-25. Agarose gel electrophoresis was used to sep. polypeptides, and free histamine (I) was assayed with an atropinized guinea pig ileum suspended in Tyrode's soln. Whereas I-binding activity of plasma was in the protein fraction, in serum it was in the peptide region; after papain digestion, results with plasma were similar to those with serum. Adrenalectomy caused loss of I-binding activity, unless rats were treated with prednisolone succinate. The I-binding peptide probably released from albumin by a papainlike action during blood coagulation. Adrenal cortex function is needed for maintenance of I-binding activity.

CC 13-13 (Mammalian Biochemistry)

ST histamine binding protein blood; adrenal histamine binding protein

IT Proteins

RL: BIOL (Biological study)

(histamine binding, blood-plasma, regulation of)

IT Corticosteroids, biological studies

RL: BIOL (Biological study)

(histamine-binding peptide of blood serum in response to)

IT Peptides, biological studies RL: BIOL (Biological study)

(histamine-binding, of blood serum, regulation of)

IT 2920-86-7

RL: BIOL (Biological study)

(histamine-binding peptide of blood serum in response to)

IT 51-45-6, biological studies RL: BIOL (Biological study)

(peptide of blood serum binding of, regulation of)

L32 ANSWER 13 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER:

1972:111092 HCAPLUS

DOCUMENT NUMBER:

76:111092

TITLE:

Histamine-binding property of human serum

AUTHOR(S):

Gecse, A.; Lonovics, J.; Szekeres, L.; Zsilinszky, E.;

West, G. B.

CORPORATE SOURCE:

Sch. Med., Univ. Szeged, Szeged, Hung.

SOURCE:

Journal of Pharmacy and Pharmacology (1972), 24(1),

70-1

CODEN: JPPMAB; ISSN: 0022-3573

DOCUMENT TYPE:

Journal

LANGUAGE:

English

AB Expts. performed on serum from healthy adult humans indicated that the albumin fraction in some way binds histamine, whereas all other fractions of the plasma were lacking in such activity. When the fraction contg. 96% of albumin was digested with papain, and then passed through Sephadex G-25, the histamine-binding activity moved to the polypeptide region of the plasma. All the low-mol.-wt. polypeptide portion had been released from the albumin during coagulation, or by papain digestion. Plasma albumin or serum peptide from blood of 8 allergic patients (generalized dermatoses) lacked histamine-binding activity, indicating that lack of a histaminopexic substance may be involved in the pathogenesis of allergic diseases.

SRIVASTAVA 10/087,195

CC 13 (Mammalian Biochemistry) blood histamine binding protein ST IT Allergy (histamine binding by albumins of blood serum in) Albumins, blood serum IT RL: BIOL (Biological study) (histamine binding by, in allergy) 51-45-6, biological studies IT RL: BIOL (Biological study) (albumins of blood serum binding of, in allergy) L32 ANSWER 14 OF 14 HCAPLUS COPYRIGHT 2003 ACS on STN 1968:75101 HCAPLUS ACCESSION NUMBER: DOCUMENT NUMBER: 68:75101 Specificity effects of cation binding to the macroion TITLE: in the bovine serum albumin-histamine interaction Botre, Claudio; Marchetti, Marcello; Borghi, Saverio AUTHOR(S): CORPORATE SOURCE: Univ. Rome, Rome, Italy Biochimica et Biophysica Acta (1968), 154(2), 360-6 SOURCE: CODEN: BBACAQ; ISSN: 0006-3002 DOCUMENT TYPE: Journal English LANGUAGE: The specific interaction between bovine serum albumin and histamine and the influence of the ionic medium on this interaction were studied. This interaction is dependent on ionic strength. Evidence is given for a crit. saline concn. which can be regarded as a threshold defining 2 sharply different behaviors of bovine serum albumin in the presence of histamine. Potentiometric measurements carried out by means of coupled perm-selective membrane electrodes provided data which showed that for a given ionic strength, bovine serum albumin requires an amt. of histamine which varies with the nature of the cations. Alkali binding to the bovine serum albumin macroion in the presence of histamine does not follow the sequence expected for polycarboxylic acids, since K+ proved to be the most tightly bound. 20 references. 2 (General Biochemistry) CC BINDING: HISTAMINE BINDING PROTEINS; ELECTROLYTES ALBUMINS HISTAMINE; CATIONS ALBUMINS HISTAMINE BINDING; ALBUMINS HISTAMINE BINDING; PROTEINS HISTAMINE BINDING IT Cations, biological studies (in histamine reaction with albumins) Albumins, blood serum IT RL: RCT (Reactant); RACT (Reactant or reagent) (reaction of, with histamine, cation binding effect on) 51-45-6, reactions IT RL: RCT (Reactant): RACT (Reactant or reagent) (with albumin, cation binding effect on)

THIS PAGE BLANK (USPTO)

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
::
                                                                                                                                                                                                                                                                                                                                    Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           seq
seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A_Geneseq_19Jun03:*

1: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1980.DAT:*

2: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1980.DAT:*

3: /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1980.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-087-195-6
952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               August 1, 2003, 12:15:04 ; Search time 53.4019 (without alignments) 511.236 Million cell
    100.0
100.0
100.0
66.2
66.2
28.1
                                                                                                                                                                                                                             Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1107863 seqs, 158726573 residues
                                                                                                                                                                                                                                                                                                                                                                                                                      | SIDSI/gcgdata/genesed/geneseqp-embl/AA1986.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA1986.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA1990.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA1990.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA1991.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA1991.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA1993.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA1995.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA1995.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA1996.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA1997.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA1999.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA1999.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA2000.DAT: *
| SIDSI/gcgdata/genesed/geneseqp-embl/AA2001.DAT: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DKPVWADEAANGEHQDAWKH.....NEYAAGLPVRDVYTSDCLPE 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1987.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /SIDS1/gcgdata/geneseq/geneseqp-embl/AA1985.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-embl/AA1986.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1982.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2000000000
                                                                      172
190
190
171
171
  190
190
182
                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gapext 0.5
    22
22
22
22
22
22
                                                                                                                                                                                                                                H
AAB74288
AAB73260
AAW37446
AAY18079
AAB74289
AAB74289
AAB73261
AAW37447
AAY18079
AAB74290
                                                                                                                                                                                                                                                                                               SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1107863
                     Histacalin protein
Histacalin protein
Tick vasoactive am
Histamine binding
Histacalin protein
Histacalin protein
Tick vasoactive am
Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               cell updates/sec
                                                                                                                                                                                                                           Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Seconds
    protein
```

79.5 78.5 78.5 77.5	79.5 79.5 79.5 79.5 5	. 80 79.5 79.5 79.5	267.5 267.5 267.5 239 209.2 209.5 207 1174 1170 93.5 84.5 82.5 81.5
8888			28.1 28.1 28.1 25.1 25.1 22.0 22.0 21.1 9.8 10.1 9.8 8.9 8.5 8.5
518 268 338	492 492 492 515	246 246 327 490 490	182 200 200 209 209 209 203 203 203 203 203 203 204 469 469 469 475 475 475 475 475 475 475 475 475 475
122	2222222	16 18 21 21 22	123 123 123 123 123 123 123 123 123 123
ABB70847 AAB49505 AAG62562 AAR41663	AAE04261 AAB60300 ABG64482 ABG64483 ABB68992 AAB6302 AAY86302	AAG94889 AAR70739 AAW18384 AAY90286 AAY86332 AAY86571 AAE04222	AAB73262 AAW37448 AAY18080 AAW37449 AAY18085 AAY18085 AAY18086 AAY18087 AAY18088 AAY18088 AAY18089 AAY18089 AAY18089 AAY18089 AAY18088 ABB58634 AAW3918087 AAW3918081 ABB58634
phila melar HE8EJ16 #1 cular conju	Human gene 6 encod Human carboxypepti Human albumin fusi Human albumin fusi Human gulescent ce Human gecreted pro	E. COLI GROWTH AND ENVE gene product. S. typhimurium env Human peptidase, H Human secreted pro Human gene 88-enco Human gene 6 encod	Histacalin protein Tick vasoactive am Histamine binding Tick vasoactive am Histamine binding Encococus placate Candida albicans e Streptococcus pneu Listeria monocytog

ALIGNMENTS

RESULT 1 Nuttall PA, Paesen GC, 01-SEP-1999; 24-AUG-2000; 2000WO-GB03282 08-MAR-2001. WO200115719-A2 Unidentified Histacalin; FS-HBP1; conjunctivitis Histacalin protein FS-HBP1 20-JUN-2001 AAB74288; AAB74288 standard; (EVOL-) EVOLUTEC LTD. 2001-257675/26 (first entry) 99GB-0020674. protein; 172 ₹

Use of histacalin proteins for treating or preventing non-infective conjunctivitis, or for manufacturing a medicament for treating or preventing conjunctivitis, e.g. seasonal or perennial allergic conjunctivitis

밁 Š В Qy 밁 δõ

```
RESULT 2
AAB73260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  XXXXXXXXXXXX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
             allergic rhinitis. The method involves employing a blood-feeding ectoparasite-derived (e.g. tick-derived) histacalin protein. The sequence is one such histacalin protein. The histacalin protein, useful for treating or preventing allergic rhinitis, both seasons perennial allergic conjunctivitis.
                                                                                                               Use of histacalin proteins for treating or preventing allergic rhinitis, or for manufacturing a medicament for treating or preventing allergic rhinitis, e.g. seasonal or perennial allergic rhinitis
Sequence
                                                                                                                                                                WPI;
                                                                                               Disclosure;
                                                                                                                                                                                                                                                                       08-MAR-2001
                                                                                                                                                                                                                                                                                                                                                FS-HBP1; histacalin
                                                                                                                                                                                                                                                                                                                                                                     Histacalin
                                                                                                                                                                                    Nuttall
                                                                                                                                                                                                        (EVOL-)
                                                                                                                                                                                                                              01-SEP-1999;
                                                                                                                                                                                                                                                 24-AUG-2000;
                                                                                                                                                                                                                                                                                            WO200116164-A2
                                                                                                                                                                                                                                                                                                                 Unidentified
                                                                                                                                                                                                                                                                                                                                     opthalmological;
                                                                                                                                                                                                                                                                                                                                                                                            15-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                 AAB73260;
                                                                                                                                                                                                                                                                                                                                                                                                                                    AAB73260 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       is
in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  e present invention relates to the use of a histacalin protein r treating or preventing conjunctivitis. The present sequence the histacalin protein FS-HBPI. The invention is particularly the treatment of allergic or seasonal conjunctivitis.
                                                                                                                                                               2001-218521/22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ب
                                                                                                                                                                                   PΑ,
                                                                                                                                                                                                        EVOLUTEC LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCLPE 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KNVEAMFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Page
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCLPE 172
 172
                                                                                                                                                                                                                                                                                                                                                                     protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  172
                                                                                               Pages
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     100.0%;
llarity 100.0%;
Conservative
                                                                                                                                                                                  Paesen
                                                                                                                                                                                                                                                  2000WO-GB03287
                                                                                                                                                                                                                                                                                                                                                                                          (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5-6;
 8
                                                                                                                                                                                                                             99GB-0020673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A,
                                                                                                                                                                                                                                                                                                                                    lin protein; antiinflammatory;
allergic rhinitis.
                                                                                               4-6;
                                                                                                                                                                                                                                                                                                                                                                                                                                    protein;
                                                                                                                                                                                                                                                                                                                                                                     FS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19pp;
                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                         entry)
                                                                                             19pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         English
                                                                                                                                                                                                                                                                                                                                                                                                                                     172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 952; DB 22;
Pred. No. 3.9e-94;
; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                     A
                                                                                                                                                                                                                                                                                                                                             antiallergic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                               seasonal and
                                                                        preventing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                   present
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
```

Best Query

Local

Similarity

100

.0%;

Score Pred.

952; No. 3

DB 22; .9e-94;

Length 172;

Match

```
RESULT 3
AAW37446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                              This protein comprises tick Rhipicephalus appendiculatus (Ra) novel female-specific histamine binding protein 1 (FS-HBP1). Its amino acid sequence was deduced from a cDNA clone (see AAV00227) obtained from a salivary gland cDNA library. FS-HSP2 and male-specific HSP1 (see AAW37447-48) and a related protein, D.RET6 (see AAW37449) from Dermacenter reticularis, were also identified. These novel vascative amine binding proteins (VABP8) can be expressed in host cells using e.g. a baculovirus expression system. They can be used: (i) to assay histamine (or other VA such as servicini) in the contractive of the contractive contract
                                                                body fluids or cell culture supernatants, e.g. to monitor the effect of allergens; (ii) for binding VA, e.g. to remove histamine from blood, food, cell cultures etc.; (iii) as an antihistamine or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                assaying or removing histamine and anti-inflammatory agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    New vasoactive amine binding proteins and related nucleic acid, vectors - transformed cells and transgenic animals, used for assaying or removing histamine and as antihistamine or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Female-specific vasoactive amine binding protein 1; FS-HCP1; histamine; serotonin; assay; antihistamine; anti-inflammatory; insect bite; snake bite; scorpion bite; dermatitis; vaccine;
                                    anti-inflammatory agents,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAW37446;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAW37446 standard; Protein; 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Example
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nuttall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (OXFO-) OXFORD VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        27-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WO9744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     transgenic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Tick vasoactive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            08-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           19-MAY-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1998-018506/02.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               172;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2; Fig 1; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAV00227.
    bites
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCLPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCLPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     animal;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      97GB-0007844.
96GB-0010484.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           97WO-GB01372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               amine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /label= Sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 tick.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   binding
                                    e.g.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       protein
                                        for treating insect,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
carrier
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               \vdash
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                        snake
                                    or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60
```

```
B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               888888×3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           metazoan
studying
                                                                                                                                                                                                                                                                                                                                                                                 Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; fod dermatitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; vaccine respiratory disease; coronary heart disease; cellular growth regulator tissue repair; blood-sucking ectoparasite; therapy.
           or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies
                                This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine
                                                                                                   Claim
                                                                                                                                     Histamine and serotonin binding
                                                                                                                                                                                                   Nuttall
                                                                                                                                                                                                                          (OXFO-)
                                                                                                                                                                                                                                                 26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                      26-NOV-1998;
                                                                                                                                                                                                                                                                                                              03-JUN-1999
                                                                                                                                                                                                                                                                                                                                      W09927104-A1
                                                                                                                                                                                                                                                                                                                                                              Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAY18078
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1mmune
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      histamine-related
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
                                                                                                                          allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Match
                                                                                                                                                                         1999-357841/30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        þ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  139
                                                                                                  1; Fig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                nerrelated compounds; (1v) in vaccines to protect against an parasites, especially in animals; (v) as reagents for ng inflammatton, involvement of VA in ulcer formation or the response etc. VABPs provide a more sensitive assay for ine than low-affinity antibodies currently used. They may e more effective and safer than conventional antihistamines.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -
                                                                                                                                                                                                 PA,
                                                                                                                                                                                                                          OXFORD
                                                                                                                                                             AAX76964
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                1; 84pp;
                                                                                                                                                                                                Paesen
                                                                                                                                                                                                                                                                                                                                                              appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş.
                                                                                                                                                                                                                          VACS
                                                                                                                                                                                                                                                                                    98WQ-GB03530
                                                                                                                                                                                                                                                9868-0013917
9768-0025046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein FS-HBP1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Protein;
                                                                                                                                                                                                                          LTD.
                                                                                                                                                                                                 ရှ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.0%;
                                                                                                  English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
 reactions,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 952; DB 19;
Pred. No. 4.5e-94;
; Mismatches 0;
                                                                                                                                     compounds useful for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                     the
                                                                                                                                     treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       190;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           or the
                                                                                                                                                                                                                                                                                                                                                                                                  regulator;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
```

Ş

DKPVWADEAANGEHODAWKHLOKLVEENYDLIKATYKNDPVWGNDFTCVGTAAONLNEDE

Query Match Best Local S Matches 113

Similarity

66.2%;

Conservative

20;

Score 630; DB Pred. No. 1.7e 20; Mismatches

22; -59; 3**7**;

0

Gaps

60

Length Indels

No. 1.7e-

Sequence

171

Ą

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  88888¥&
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                    Use of histacalin proteins for treating or preventing conjunctivitis, or for manufacturing a medicament for preventing conjunctivitis, e.g. seasonal or perennial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   rhinitis (hay fever), atopic dermatitis, insect bites and food and drallergies, abnormal blood pressure, migraine, psychological disorders respiratory disease, and coronary heart disease). Histamine may also used to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       rhinitis (hay fever), atop
allergies, abnormal blood
                                                                                                                                                                                                                                                                                                                                                      Unidentified.
                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAB74289;
                                                                                     Claim 4;
                                                                                                                                                                                                                                                  01-SEP-1999;
                                                                                                                                                                                                                                                                           24-AUG-2000;
                                                                                                                                                                                                                                                                                                    08-MAR-2001.
                                                                                                                                                                                                                                                                                                                             WO200115719-A2
                                                                                                                                                                                                                                                                                                                                                                              Histacalin;
                                                                                                                                                                                                                                                                                                                                                                                                     Histacalin
                                                                                                                                                                                                                                                                                                                                                                                                                              20-JUN-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAB74289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                         (EVOL-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local
                   e present invention relates to the use of a histacalin protein reating or preventing conjunctivitis. The present sequence the histacalin protein FS-HBP1. The invention is particularly the treatment of allergic or seasonal conjunctivitis.
                                                                                                                                                                         2001-257675/26.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -
                                                                                                                                                                                              PA,
                                                                                                                                                                                                                         EVOLUTEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                  Page 5-6; 19pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VIYALGPDGSGAGYELWATDYTDVPASCLEKENEYAAGLPVRDVYTSDCLPE 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCLPE 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               standard; protein; 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KNVEAWEMEMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DKPVWADEAANGEHQDAWKHLQKLYEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  190
                                                                                                                                                                                                                                                                                                                                                                                                     protein FS-HBP2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             100.0%;
ilarity 100.0%;
Conservative
                                                                                                                                                                                                                                                                                                                                                                              FS-HBP1;
                                                                                                                                                                                                 Paesen
                                                                                                                                                                                                                                                                           2000WO-GB03282.
                                                                                                                                                                                                                                                                                                                                                                                                                              (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ą
                                                                                                                                                                                                                                                  99GB-0020674.
                                                                                                                                                                                                                         LTD
                                                                                                                                                                                                                                                                                                                                                                                                                              entry)
                                                                                                                                                                                                                                                                                                                                                                             conjunctivitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 952;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                $
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     952;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4.5e-94;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     against blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                       y non-infective
r treating or
l allergic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         190;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          disorders,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                   useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   drug
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             78
```

```
RESULT 6
AABJULT 6
AABJULT 6
AABJULT 15
ID 73261
ID 73261
ID 73261
AC AABJULT 15-M
XX AABJULT 15-M
XX AABJULT 15-M
XX OPTH
XX 
                                                                                                    밁
                                                                                                                                                   Ωy
밁
                                         δ
                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The present invention relates to a method for treating or preventing allergic rhinitis. The method involves employing a blood-feeding ectoparasite-derived (e.g. tick-derived) histacalin protein. The presequence is one such histacalin protein. The histacalin protein, is useful for treating or preventing allergic rhinitis, both seasonal and protein of the presequence is the protection of the presenting allergic rhinitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Use of histacalin proteins for treating or preventing allergic rhinitis, or for manufacturing a medicament for treating or preventing allergic rhinitis, e.g. seasonal or perennial allergic rhinitis
                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Nuttall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-SEP-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        08-MAR-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FS-HBP2; histacalin protein; antiinflammatory; antiallergic; opthalmological; allergic rhinitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Histacalin protein FS-HBP2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Disclosure; Pages 4-6; 19pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   24-AUG-2000; 2000WO-GB03287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO200116164-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAB73261;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAB73261 standard; protein; 171 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    perennial allergic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (EVOL-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               15-MAY-2001 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2001-218521/22
                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                       19
                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                          113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                          PA,
                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EVOLUTEC LTD
                              VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL
                                                                                                                                  KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL 170
VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL
                                                                                                       KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD
                                                                                                                                                                                                              NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD 120
                                                                                                                                                                                                                                                                                                                                                                                                                               171 AA;
                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99GB-0020673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    conjunctivitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                 66.2%;
                                                                                                                                                                                                                                                                                                                        20;
                                                                                                                                                                                                                                                                                                                  Score 630; DB
Pred. No. 1.7e
20; Mismatches
                                                                                                                                                                                                                                                                                                                  DB 22;
1.7e-59;
hes 37;
                                                                                                                                                                                                                                                                                                                                                                       Length 171;
                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             seasonal and
                                               170
170
                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               The present
                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                         120
                                                                                                         120
                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          60
                                                                                                                                                                                                                                                                                                                     0
```

```
RESULT 7
AAW37447
                         This protein comprises tick Rhipicephalus appendiculatus (Ra) novel CC female-specific histamine binding protein 2 (FS-HBP2). Its amino acid sequence was deduced from a cDNA clone (see AAW00228) obtained CC from a salivary gland cDNA library. FS-HSP1 (see AAW37446) and male-specific HSP1 (see AAW37448) and a related protein, D.RF76 (see CC AAW37449) from Dermacenter reticularis, were also identified. These convel vascactive amine binding proteins (VABPs) can be expressed in host cells using e.g. a baculovirus expression system. They can be used: (i) to assay histamine (or other VA such as serotonin) in be used: (i) to assay histamine (or other VA such as serotonin) in cc bedy fluids or cell culture supernatants, e.g. to monitor the body fluids or cell cultures stor; (ii) as an antihistamine or creftect of allergens; (ii) for binding VA, e.g. to remove histamine creft from blood, food, cell cultures etc.; (iii) as an antihistamine or anti-inflammatory agents, e.g. for treating insect, snake or carrierion bites or dermatitis, or as a carrier for slow release of histamine-related compounds; (iv) in vaccines to protect against complete than low-affinity antibodies currently used. They may calso be more effective and safer than conventional antihistamines.
                                                                                                                                                                                                                                                                                                                                                                                                                                    New vasoactive amine binding proteins and related nucleic acid, vectors - transformed cells and transgenic animals, used for assaying or removing histamine and as antihistamine or anti-inflammatory agents
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       08-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAW37447 standard; Protein; 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 1998-018506/02.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     19-MAY-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        27-NOV-1997.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               insect bite; snake bite; scorpion bite; dermatitis;
transgenic animal; tick.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Female specific vasoactive amine binding protein 1; FS-HCP1;
histamine; serotonin; assay; antihistamine; anti inflammatory;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Tick vasoactive amine binding protein 2 FS-HBP2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAW37447;
                                                                                                                                                                                                                                                                                                                                                                                                   Example 2; Fig 2; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO9744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (OXFO-) OXFORD VACS LTD
190 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                97GB-0007844.
96GB-0010484.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     97WO-GB01372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /label= Sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GC;
```

Ş

Query Match
Best Local Similarity
Matches 113; Conserv

Conservative

20;

Score 630; pB 1 pred. No. 2e-59; 0; Mismatches

рв 19; 37;

Length Indels

0;

Gaps

0

66.5%;

```
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                        Query Match
Best Local :
                                         Matches
                                                                                                                                 This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking
                                                                                                                                                                                                                                                                                                                    Claim 1; Fig 2; 84pp; English
                                                                                                                                                                                                                                                                                                                                                of allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator;
                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Histamine binding protein FS-HBP2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAY18079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAY18079 standard;
                                                                                                                                                                                                                                                                                                                                                           Histamine and serotonin binding
                                                                                                                                                                                                                                                                                                                                                                                                        WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                               Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                          (OXFO-) OXFORD
                                                                                                                                                                                                                                                                                                                                                                                                     1999-357841/30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                         113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     repair; blood-sucking ectoparasite;
                                                        Similarity
DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE
                                                                                                190
                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                               Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              appendiculatus
                                                                                              ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                          VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     98GB-0013917.
97GB-0025046.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                               ရှ
                                                      66.2%;
                                         20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       190
                                                   Score 630; DB 20
Pred. No. 2e-59;
                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                           compounds useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ₹
                                                                  DB 20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        therapy
                                         37;
                                                                   Length 190;
                                                                                                                                                                                                                                                                                                                                                             for the
                                         Indels
                                                                                                                                                                                                                                                                                                                                                             treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    170
                                         0
                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      79
```

```
RESULT 10
AAB73262
ID AAB73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 9
AAB74290
ID AAB7
                                                                                                                          Ş
                                                                                                                                                                                                                                                 ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                          밁
                                                                               ő
                                                                                                      밁
                                                                                                                                                     밁
                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                   Query Match
Best Local S
Matches 70
                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                    The present invention relates to the use of a histacalin protein for treating or preventing communctivitis. The present sequence is the histacalin protein FS-HBPI. The invention is particularly in the treatment of allergic or seasonal conjunctivitis.
                                                                                                                                                                                                                                                                                                                                Claim 4;
                                                                                                                                                                                                                                                                                                                                                              Use of histacalin proteins for treating or preventing conjunctivitis, or for manufacturing a medicament for preventing conjunctivitis, e.g. seasonal or perennial
                                                                                                                                                                                                                                                                                                                                                                                                                  WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-SEP-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       08-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WO200115719-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Histacalin; MS-HBP1; conjunctivitis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Histacalin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAB74290;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAB74290 standard;
                                                                                                                                                                                                                                                                                                                                                        conjunctivitis
                                                                                                                                                                                                                                                                                                                                                                                                                                         Nuttall PA, Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               24-AUG-2000; 2000WO-GB03282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20-JUN-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                (EVOL-) EVOLUTEC LID
                                                                                                                                                                                                                                                                                                                                                                                                                 2001-257675/26
                                                                   140
                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20
                                                                                                                             63 VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED--GQVLTDVLAFSD-DNC 119
                                                                                                                                                                3 PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN
                                                                                                                                                     N
                                                                                                                                                                                                     70;
                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                Page 5-6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL 170
                                                          DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP
                                                                                                      LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                     PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KNVEAWFMEMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein
                                                                                                                                                                                                                                                 182 AA;
                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        99GB-0020674.
                                                                                                                                                                                                                                                                                                                                19pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein;
                                                                                                                                                                                                            28.1%;
                                                                                                                                                                                                    20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        182
                                                                                                                                                                                                              Score 267.5;
Pred. No. 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ą
                                                                                                                                                                                                    M1smatches
                                                                                                                                                                                    DB 1.9e-20;
                                                                                                                                                                                                                         22;
                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                  g non-infective
r treating or
l allergic
                                                                                                                                                                                                   11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 189
                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                  useful
                                                          177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             79
```

AAB73262 standard;

protein;

182

⋛

```
AAW37448
ID AAW3
XX
AC AAW3
AC AAW3
DT 08-J
XX
DE Tick
XX
Male
KW Male
KW inse
KW inse
KW trar
                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                            Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 11
                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                              Q
                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
            Male-specific vasoactive amine binding protein 1; MS-HCP1; histamine; serotonin; assay; antihistamine; anti-inflammatory; insect bite; snake bite; scorpion bite; dermatitis; vaccine; transgenic animal; tick.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The present invention relates to a method for treating or preventing allergic rhinitis. The method involves employing a blood-feeding ectoparasite-derived (e.g. tick-derived) histacalin protein. The presensequence is one such histacalin protein. The histacalin protein, is useful for treating or preventing allergic rhinitis, both seasonal and perennial allergic conjunctivitis.
                                                                             Tick vasoactive amine binding protein 1 MS-HBP1
                                                                                                            08-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Use of histacalin proteins for treating or preventing allergic rhinitis, or for manufacturing a medicament for treating or preventing allergic rhinitis, e.g. seasonal or perennial allergic rhinitis -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI;
                                                                                                                                     AAW37448;
                                                                                                                                                               AAW37448
                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Disclosure;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Nuttall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (EVOL-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-SEP-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      24-AUG-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 08-MAR-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO200116164-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             opthalmological;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MS-HBP1; histacalin protein; antiinflammatory; antiallergic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Histacalin protein MS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             15-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAB73262;
                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2001-218521/22
                                                                                                                                                                                                                                                                                    60
                                                                                                                                                                                                                                                                                                              63
                                                                                                                                                                                                                                                                                                                                         N
                                                                                                                                                                                                                                                                                                                                                                  w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EVOLUTEC LID
                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                               YVIYALGPDGSGAG-YELWAT-DYTDVPASCLEKFNEYAA---GLPVRDVYT-SDCLP 171
                                                                                                                                                               standard;
                                                                                                                                                                                                                               DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP 177
                                                                                                                                                                                                                                                                                 LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                          VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED--GQVLTDVLAFSD-DNC 119
                                                                                                                                                                                                                                                                                                                                      PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                                                                                                                                                                                PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                182
                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pages
                                                                                                          (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2000WO-GB03287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99GB-0020673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            allergic rhinitis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4-6; 19pp; English.
                                                                                                                                                              Protein;
                                                                                                         entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                      28.1%;
                                                                                                                                                                                                                                                                                                                                                                                            20;
                                                                                                                                                               200
                                                                                                                                                                                                                                                                                                                                                                                         Score 267.5; DB 22;
Pred. No. 1.9e-20;
Pred. No. 77;
                                                                                                                                                                                                                                                                                                                                                                                                                  DB 22;
                                                                                                                                                                                                                                                                                                                                                                                                                 Length
                                                                                                                                                                                                                                                                                                                                                                                                                    182;
                                                                                                                                                                                                                                                                                                                                                                                           11;
                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                present
is
                                                                                                                                                                                                                                                                                   119
```

RESULT 12 AAY18080

138

DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP

```
Ş
                                                           망
                                                                                                                 Š
                                                                                                                                                                                                                                οy
                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                This protein comprises tick Rhipicephalus appendiculatus (Ra) novel male-specific histamine binding protein (MS-HBP1). Its amino acid sequence was deduced from a cDNA clone (see AAW00227) obtained from a salivary gland cDNA library. Female-specific HSP1 and the specific HSP1 and the specific HSP1 and the specific HSP2 (see AAW37446-47) and a related protein, D.RET6 (see AAW37449) of from Dermacenter reticularis, were also identified. These novel vasoactive amine binding proteins (VABPs) can be expressed in the specific to the sed: (i) to assay histamine (or other VA such as serotonin) in body fluids or cell culture supernatants, e.g. to monitor the effect of allergens; (ii) for binding VA, e.g. to remove histamine from blood, food, cell cultures etc.; (iii) as an antihistamine or anti-inflammatory agents, e.g. for treating insect, snake or scorpion bites or dermatitis, or as a carrier for slow release of histamine-related compounds; (iv) in vaccines to protect against
                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         also
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           metazoan parasites, especially in animals; (v) as reagents for studying inflammation, involvement of Va in ulcer formation or immune response etc. VABPS provide a more sensitive assay for histamine than low-affinity antibodies currently used. They may be a superior of the contract of t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        New vasoactive amine binding proteins and related nucleic vectors - transformed cells and transgenic animals, used f assaying or removing histamine and as antihistamine or
                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Example 2; Fig 3; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          anti-inflammatory agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     кеу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 1998-018506/02.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19-MAY-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        27-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WO9744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (OXFO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      be
  120
                                                              78
                                                                                                                 63 VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED--GQVLTDVLAFSD-DNC 119
                                                                                                                                                                             20
                                                                                                                                                                                                                                      w
                                                                                                                                                                                                                                                                                              70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         more
                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OXFORD VACS LTD
YVIYALGPDGSGAG-YELWAT-DYTDVPASCLEKFNEYAA---GLPVRDVYT-SDCLP
                                                                                                                                                                                                                                   PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN 62
                                                              LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC 137
                                                                                                                                                                             PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 77
                                                                                                                                                                                                                                                                                                                                                                                                                200
                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   effective and safer than conventional antihistamines
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           97GB-0007844.
96GB-0010484.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               97WO-GB01372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /label= Sig_peptide 79..81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note= "Asn is N-glycosylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                         28.1%;
39.3%;
                                                                                                                                                                                                                                                                                              20;
                                                                                                                                                                                                                                                                                                                      Score 267.5; D
Pred. No. 2.1e-
                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                    DB 19;
                                                                                                                                                                                                                                                                                           -20;
77;
                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                 Length 200;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   acid,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       for
n or the
                                                                                                                                                                                                                                                                                           11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 may
                                                                                                                                                                                                                                                                                           Gaps
```

```
В
                       Ş
                                                           밁
                                                                                  Š
                                                                                                                    В
                                                                                                                                                 Š
                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                           This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bices and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease) Histamine may also be used to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking ectoparasites.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; drug allergy; abrooman blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator; tissue repair; blood-sucking ectoparasite; therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Histamine and serotonin binding compounds useful for of allergies
                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Nuttall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Histamine binding protein MS-HBP1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAY18080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (OXFO-)
                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1999-357841/30.
DB; AAX76966.
 138
                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1; F1g 3; 84pp;
                                                            78
                                                                                         63
                                                                                                                       20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OXFORD VACS LTD.
                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      standard; Protein;
DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP
                                                                                       VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED---GQVLTDVLAFSD-DNC 119
                                                                                                                                                    PVWADEAANGEHODAWKHLOKLVEENYDLIKATYKNDPVWGNDFTCVGTAAONLNEDEKN 62
                            YVIYALGPDGSGAG-YELWAT-DYTDVPASCLEKFNEYAA---GLPVRDVYT-SDCLP 171
                                                            LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                       PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK
                                                                                                                                                                                                                                               200 AA;
                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     appendiculatus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98GB-0013917.
97GB-0025046.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ရှ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        entry)
                                                                                                                                                                                                 28.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         English
                                                                                                                                                                                 20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             serotonin binding compound; inflammation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        200
                                                                                                                                                                             Score 267.5; DB 20;
pred. No. 2.1e-20;
pred. No. 27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ⋛
                                                                                                                                                                                  Indels
                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        the treatment
                                                                                                                                                                                                                200;
                                                                                                                                                                                  11;
                                                                                                                                                                                 Gaps
 195
                                                                                                                         77
```

RESULT 13 AAW37449

Ş

60 29

EKNVEAWFMFMNNADTV-YQHTFEKATPDKMYGY-NKENAITYQTEDGQVLTDVLAFSD- 116 ENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQVQEIERKEE DKPVWADEAANGEHODAWKHLOKLVEENYDLIKATYKNDP-VWGNDFTCVGTAAQNLNED

Ş

Query Match Best Local S Matches 61

Similarity

25.1%; 34.5%;

Score 239; DB 19; Pred. No. 2.6e-17; Mismatches

Length Indels

Conservative

24;

82;

10;

Gaps

59 88

밁

```
cultures etc.; (iii) as an antinistamine or agents, e.g. for treating insect, snake or scorpion bites or agents, e.g. for treating insect, snake or sorphism bites or dermatitis, or as a carrier for slow release of histamine-related compounds; (iv) in vaccines to protect against metazoan parasites, especially in animals; (v) as reagents for studying inflammation, involvement of VA in ulcer formation or the immune response etc. VABPs provide a more sensitive assay for histamine than low-affinity antibodies currently used. They may also be more effective and safer than conventional antihistamines.
                                                                                                                                                                This protein comprises tick Dermacenter reticularis (Dr) novel vasoactive amine binding protein (VABP) D.RFM. Its amino acid sequence was deduced from a cDNA clone (see AAV00230) obtained from a Dr salivary gland cDNA library. 3 Novel VASPs, designated FS-HBP1, FS-HBP2 and MS-HBP1 (see AAW37446-48), of the tick Rhipicephalus appendiculatus have also been identified. The VABPs can be expressed in host cells using e.g. a baculovirus expression system. They can be used: (1) to assay histamine (or other VA such as serotonin) in body fluids or cell culture supernatants, e.g. to monitor the effect of allergens; (11) for binding VA, e.g. to remove histamine from blood, food, cell cultures etc.; (11) as an antihistamine or anti-inflammatory
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Key
Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                               New vasoactive amine binding proteins and related nucleic vectors - transformed cells and transgenic animals, used fassaying or removing histamine and as antihistamine or anti-inflammatory agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           scorpion
Sequence
                                                                                                                                                                                                                                                                                                                                                                                               Example 2; Fig 4; 44pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19-MAY-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    27-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     W09744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Dermacenter reticularis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Vasoactive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Tick vasoactive amine binding protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAW37449 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (OXFO-) OXFORD VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1998-018506/02.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         tive amine binding protein; D.RET6; histamine; seroton
antihistamine; anti-inflammatory; insect bite; snake
on bite; dermatitis; vaccine; transgenic animal; tick.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAV00230
209
Ŗ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              97GB-0007844.
96GB-0010484.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                97WO-GB01372.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
1..28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /label- Sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                entry)
                                                                                                                                                                                                                                                                                                                                                                                               English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 D.RET6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               bite;
```

```
RESULT 14
ANY18081
ID AAY180
XX ANY18
AC ANY18
ANY18
A
      Ş
                                                            밁
                                                                                                               Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                      This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abhormal blood pressure, migraine, psychological disorders,
                                                                                                                                                                                                                                                                                                                                                                                   respiratory disease, and coronary heart disease). Histamine may also used to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking
                                                                                                                                                                                                                                                                                                  Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             of allergies
                                                                                                                                                                                                                                                                                                                                                        ectoparasites.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 1; Fig 4; 84pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Histamine and serotonin binding compounds useful for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    03-JUN-1999.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator; tissue repair; blood-sucking ectoparasite; therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 1999-357841/30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAY18081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAY18081 standard; Protein; 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (OXFO-) OXFORD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Rhipicephalus appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Histamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        06-AUG-1999
                                                                                                                                                                                                             Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            117
         60
                                                               29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   89
                                                                                                                                                                                  61;
                                                                                          1 DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDP-VWGNDFTCVGTAAQNLNED : |:|| | |:|| ||:|| ||:|| ||:|| ||:|| ||:||
                                                                                                                                                                                                             Similarity
EKNVEAWFMFMNNADTV-YQHTFEKATPDKMYGY-NKENAITYQTEDGQVLTDVLAFSD-
                                                            ENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQVQEIERKEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DNCYVIYALGPDGSGAGYELWA--TDYTDVPASCLEKFNEYAA-GLPVRDVYTSDCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ELCDVFYVPNAD - - - QGCELWVKKSHYKHVPDYCTFVFNVFCAKDRKTYDIFNEECV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             209
                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                  Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VACS LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      98GB-0013917
97GB-0025046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein D.RET6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                       25.1%;
                                                                                                                                                                               24;
                                                                                                                                                                         Score 239; DB 20;
Pred. No. 2.6e-17;
4; Mismatches 82;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A
                                                                                                                                                                                                                               Length
                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                             The molecules may inst blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     the
                                                                                                                                                                                                                                     209;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        treatment
                                                                                                                                                                            10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         170
                                                                                                                                                                                                                                                                                                                                                                                                                                         be
                                                            88
```

QΥ

14 HQDAWKHLQKLYEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMFMNNA

:::= = = :=::

Query Match Best Local : Matches

Similarity

22.0%;

Conservative

28;

Score 209.5; DB 20 Pred. No. 3.8e-14; 8; Mismatches 75;

20;

Indels Length

7;

Gaps

73 Ģ

```
RESULT 15
AAY18085
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                             This sequence is an example of a histamine or serotonin binding compound (A), of the invention. cDNA encoding this sequence was isolated from a mixed Boophilus microplus/Ixodes hexagonus cDNA expression library. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking ectoparasites.
Sequence
                                                                                                                                                                                                                                                                                                  Claim 13; Fig 7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; doubted blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator;
                                                                                                                                                                                                                                                                                                                                       of allergies
                                                                                                                                                                                                                                                                                                                                                      Histamine and serotonin binding
                                                                                                                                                                                                                                                                                                                                                                                          N-PSDB; AAX76970
                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 1999-357841/30
                                                                                                                                                                                                                                                                                                                                                                                                                                             Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Histamine binding protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAY18085;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAY18085 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (OXFO-) OXFORD VACS LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ixodes hexagonus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Boophilus microplus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             tissue repair; blood-sucking ectoparasite;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                149 ELCDVFYVPNAD----QGCELWVKKSHYKHVPDYCTFVFNVFCAKDRKTYDIFNEECV 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DNCYVIYALGPDGSGAGYELWA--TDYTDVPASCLEKFNEYAA-GLPVRDVYTSDCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDG 148
                                                                                                                                                                                                                                                                                                                                                                                                                                             Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry
 A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98GB-0013917.
97GB-0025046.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    98WO-GB03530
                                                                                                                                                                                                                                                                                                 84pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ih/Bm-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            203
                                                                                                                                                                                                                                                                                                                                                       compounds useful for the treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             inflammation;
```

Searc Job t	문	οy	뮻	Ş	Ф
ch comple Lime : 54	159	13:	10:	7,	4 5.
Search completed: August 1, 2003, 12:22:46 Job time : 54.4019 secs	159 GYELMVRSDYLQNTPTCCQFIFDLVALGRTTYNISTPDCV 198	133 GYELWA-TDY-TDYPASCLEKFNEYAAGLPYRDYYTSDCL 170	103 QQWVSMT-ENVTAVQEEGYDVKNIIQWTTENNTKFNDTVVFTDGQTCDLLYIPYKEN 158	74 DTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSD-DNCYVIYALGPDGSGA 132	43 YQDAWKSINQNVSTTYYFLRSTYNNDSVWGKNFTCLSVTVTSKHESTETVEYNTTYKNQS 102

THIS PAGE BLANK (USPTO)

Run

```
Minimum
Maximum
                                                                                                                                                                                                                                                                                                         Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                      Database
                                                                                                                                                                                                                                                                                                                                                                                                     Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Scoring table:
   Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                          B B
                                                                               Score
  74
74
73.5
73.5
73.5
73.5
                                                                                                                                                                                                                                                                                                                                                                                                                                         seq
                                                                                                                                                                                                                                                                                                                                                                                                                                        length:
                                                                                                                                                                                                                                                                                                        Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   127863 seqs,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-087-195-6
952
  August 1, 2003, 12:15:03;
                                                                                                                                                                                                                                                                                                                  Query
                                                                                                                                                                                                                                                                                                                                                                                     SwissProt_41:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DKPVWADEAANGEHQDAWKH.....NEYAAGLPVRDVYTSDCLPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen
                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                          2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                    0
  DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    47026705 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gapext
          EUCO_HUMAN
EST2_CAEELI
SYAC_YEASTI
HSLO_CAUCR
PAC4_RAT
COFI_PIG
PRAN_PIERA
HGPB_HAEIN
PYRB_HELPJ
MYCLE
CFAH_MOUSE
ILVB_SPIPL
SUF_DROME
RPA2_DROME
RPA2_DROME
                                                                                                                                                            ARJ2_ANASP
SYSC_YEAST
DPP2_HUMAN
TOR1_SCHPO
PFTA_SCHPO
PAC4_HUMAN
PCK5_RAT
                                                                                                                                                                                                                                                   HBP1_RHIAP
HBP2_RHIAP
HBPM_RHIAP
YKQ5_YEAST
XDHD_BACSU
                                                                                                                                                                                                                                  AMY_STRLI
HTRE_ECOLI
                                                                                                                                                     HMW3_MYCPN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0.5
                                                                                                                                                                                                                                                                                                                                   SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (without alignments)
771.532 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Search time 10.4838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    127863
077420 rhipicephal
077421 rhipicephal
077422 rhipicephal
077422 rhipicephal
077422 rhipicephal
077422 rhipicephal
077422 rhipicephal
077422 rhipicephal
075804 saccilius su
005884 streptomyce
032144 bacilius su
005886 streptomyce
033129 escherichia
089pf9 a arginine
041356 schizosacch
060052 schizosacch
0700666 homo sapien
070066 homo sapien
070066 saccharomyc
070066 sus scrofa
09u844 pieris rapa
09u844 pieris rapa
09u844 pieris rapa
0807296 haemophilus
09zm81 heilcobacter
06081 mycobacteri
060801 mycobacteri
006081 mycobacteri
                                                                                                                                                                                                                                                                                                        Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Seconds
                                                                                                                                                                                                                                 2 rhipicephal
1 saccharomyc
4 bacillus su
4 streptomyce
9 escherichia
         1 helicobacte
3 vigna aconi
1 mycobacteri
9 mus musculu
1 bacillus me
8 spirulina p
1 drosophila
6 drosophila
                                                                                                        6 homo sapien
5 caenorhabdi
5 saccharomyc
7 caulobacter
5 rattus norv
                                                                                                                                                    schizosacch
homo sapien
rattus norv
mycoplasma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 172
                                                                                                 Ş
                           밁
                                           Ş
                                                              Query Match
Best Local Sim
Matches 172;
```

DISULFID DISULFID SEQUENCE

66 137 190

187 I 166 I 21370 MW;

BY SIMILARITY.
BY SIMILARITY.
; 855BE151A90053B1 CRC64;

ΑA;

Similarity

100.0%; ilarity 100.0%; Conservative (

0

Score 952; DB 1; Pred. No. 5.5e-77; Mismatches 0;

Length Indels

190; 0

Gaps

61 19

KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY

120 78 60 0

DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE

```
and de la constant de
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      片
                            STRAND
TURN
                                             STRAND
TURN
                                                                                STRAND
TURN
                                                                                                 TURN
STRAND
TURN
                                                                                                                                    TURN
HELIX
HELIX
HELIX
TURN
TURN
STRAND
                                                                                                                                                                                      DISULFID DISULFID
                                                                                                                                                                                                                        ProDom;
Signal;
SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HBP2_RHIAP
077421;
                                                               TURN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
30-FEB-2000 (Rel. 41, Last annotation update)
Female-specific histamine-binding protein 2 precursor (FRhipicephalus appendiculatus (Brown ear tick).
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Parasitiformes; Ixodida; Ixodidae; Rhipicephalus.
    STRAND
                    STRAND
                                                                       STRAND
                                                                                                                                                                                                                                                                                                  entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                   use by non-profit institutions as long as its content modified and this statement is not removed. Usage by an
                                                                                                                                                                                                                                                                                                                                                                                                              "Tick histamine-binding proteins: isolation, cloning, dimensional structure.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RHIAP
                                                                                                                          STRAND
                                                                                                                                                                                                               CHAIN
                                                                                                                                                                                                                                                Pfam; PF02098; His_binding;
                                                                                                                                                                                                                                                          InterPro;
                                                                                                                                                                                                                                                                 PDB; 1QFT; 19-APR-00.
PDB; 1QFV; 19-APR-00.
                                                                                                                                                                                                                                                                                   EMBL; U96081; AAC63107.1;
                                                                                                                                                                                                                                                                                                                                      the
                                                                                                                                                                                                                                                                                                                                               between
                                                                                                                                                                                                                                                                                                                                                                         -
                                                                                                                                                                                                                                                                                                                                                                                                                                           TISSUE=Salivary gland;
MEDLINE=99288454; PubMed=10360182;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A., AND X-RAY CRYSTALLOGRAPHY (1.25 ANGSTROMS)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=34631;
                                                                                                                                                                                                                                                                                                                                                                      . Cell 3:661-671(1999).
FUNCTION: BINDS HISTAMINE WITH A HIGH-AFFINITY.
OUTCOMPETE HISTAMINE RECEPTORS INDICATES THAT IT
SUPPRESS INFLAMMATION DURING BLOOD FEEDING.
SUBCELLULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                                                    European Bioinformatics Institute.
                                                                                                                                                                                                                                                                                                                                  SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation - European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      79
                                                                                                                                                                                                                                 3D-structure.
                                                                                                                                                                                                                                         PD152455;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLFVRDVYTSDCLPE 172
                                                                                                                                                                                                                                                      IPR002970; His_binding.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCLPE 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY 138
    67
138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STANDARD;
                                                                                                                                                                                                                                       s_binding; 1.
His_binding; 1.
                    24
30
31
41
41
41
41
41
41
58
61
58
61
61
76
63
76
80
80
80
80
110
1121
1123
                                                                                                                                                                                                               190
                                                                                                                                                                                                       FEMALE-SPECIFIC HISTAMINE-BINDING PROTEIN 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              precursor (FS-HBP2).
                                                                                                                                                                                                                                                                                                                                                                                        ITS
                                                                                                                                                                                                                                                                                                                                                                                                                                  Stuart D.I.;
                                                                                                                                                                                                                                                                                                                   Ьy
                                                                                                                                                                                                                                                                                                                                                                                        THE ABILITY TO
                                                                                                                                                                                                                                                                                                                                                                                                                          and three-
                                                                                                                                                                                                                                                                                                                    and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Acar1;
                                                                                                                                                                                                                                                                                                                    for
                                                                                                                                                                                                                                                                                                                   commercial
                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÔ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QV
                                                                                                                                                                                                                                                                                                                                                                                                        HBPM_RHIAP
Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity
Matches 113; Conserv
                         DISULFID
DISULFID
SEQUENCE
                                                            Signal.
SIGNAL
CHAIN
                                                                                                                                                                                                                                                                                                                                                                                       HBPM_RHIAP
077422;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TURN
SEQUENCE
                                                                                                                                                                                             This
                                                                                      ProDom;
                                                                                               InterPro; IPR002970; His_binding
Pfam; PF02098; His_binding; 1.
                                                                                                                                                  entities requires a
                                                                                                                HSSP;
                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                  NCBI_TaxID=34631;
                                                                                                                                                                                                                                                                                                                                                                                                                                            140
                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                077421;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20
                                                                                       PD152455;
                         65
137
200
                                                             1
19
                           ΑA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A,
                                                                                                                                                                                                                                                                                                                                                                                               STANDARD;
                                                                                     His_binding; 1.
                         193 I
169 I
22851 MW;
                                                            18
200
 28.1%;
39.3%;
```

```
SETTIFIE
                                                                                                                                                                                                                                                             STRAND
TURN
HELIX
TURN
STRAND
                                                                     VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL
                                                                                                                         KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY 120
                                                                                                                                                             DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                         VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL
                                                                                                     KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD
                                                                                                                                               NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE
                                                                                                                                                                                                                                      152
160
165
175
181
181
186
                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                               157
161
174
177
182
188
21464
                                                                                                                                                                                                     66.2%;
66.5%;
                                                                                                                                                                                                                                        MW;
                                                                                                                                                                                            20;
                                                                                                                                                                                          Score 630; DB 1;
Pred. No. 1.3e-48;
0; Mismatches 37
 PRT;
                                                                                                                                                                                                                                         6923A3E902552B6F CRC64
 200
Ã
                                                                                                                                                                                                               Length 190
                                                                                                                                                                                          0;
                                                                                                                                                                                            Gaps
                                                                                                     139
                                                                                                                                               79
```

```
MO1. Cell 3:661-671(1999).

-i- FUNCTION: BINDS HISTAMINE WITH A HIGH-AFFINITY. THE ABILITY TO OUTCOMPETE HISTAMINE RECEPTORS INDICATES THAT ITS FUNCTION IS SUPPRESS INFLAMMATION DURING BLOOD FEEDING.

-i- SUBCELLULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
30-MAY-2000 (Rel. 39, Last annotation update)
30-MAY-2000 (Rel. 39, Last annotation update)
Male-specific histamine-binding salivary protein precursor (MS-HBP).
Rhipicephalus appendiculatus (Brown ear tick).
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari;
Parasitiformes; Ixodida; Ixodidae; Rhipicephalus.
                                                             entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                       dimensional structure.";
Mol. Cell 3:661-671(1999)
EMBL; U96082; AAC63108.1;
                                                                                                                           use by non-profit institu
modified and this statement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              raesen G.C., Adams P.L., Harlos K., Nuttall P.A., Stu-
"Tick histamine-binding proteins: isolation, cloning,
dimensional structure".
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TISSUE=Salivary gland;
MEDLINE=99288454; PubMed=10360182;
                                                                                                                                                                                         the European Bioinformatics Institute.
                                                                                                                                                                                                                SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                           institutions as long as atement is not removed. (
                                                                                           (See http://www.isb-sib.
                                                                                                                                                  There are no rest
                                                                                                                           Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Stuart
                                                                                                                                                                                   restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        and three-
                                                                                                                           and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ū
                                                                                                                           for
                                                                                                                                                                                                                                                                                                                                                                                ō
                                                                                                                                                                                             9
```

PROTEIN. BY SIMIL BY SIMIL

SIMILARITY.

POTENTIAL.
MALE-SPECIFIC

HISTAMINE-BINDING

SALIVARY

Score 267.5; DB 1; Pred. No. 1.1e-16;

Length 200;

C46A1C8C6BCAA008 CRC64;

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; TOPOLOGY: linear; MOLECULE TYPE: protein US-08-790-912-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-08-271-354-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEX: 831-494
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
LENGTH: 2052 Amile
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  tent No.
                                                                                                                                                                                                                                                                  COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release $1.0, Version $1.25
SOFTWARE: and WordPerfect (Version 5.1)
CURRENT APPLICATION DATA:
                        PRIOR APPLICATION DATA:
APPLICATION NUMBER: C
FILING DATE: July 9,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION: SP
NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE/DOCKET NUMBER: 76
TELECOMMUNICATION INFORMATION:
TELEPHONE: (215) 567-2020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: M111e1, Junior APPLICANT: Mekalanos, John J.
APPLICANT: Mekalanos, John J.
APPLICANT: MEKALANOS, JOHN J.
APPLICANT: M111e1, Junior J.
APPLICANT: M211e1, Junior J.
APPLICANT: M211e
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILING DATE: 23-SEP-1996
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 60/026,939
                                                                                                                                                                                             APPLICATION NUMBER: FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    / Match 8.5%;
Local Similarity 24.1%;
les 45; Conservative 25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NAME: Leary, Kathryn
REGISTRATION NUMBER: 36,317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICATION NUMBER: US/08/790,912 FILING DATE: 29-JAN-1997
                                                                                                                                                            CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADDRESSEE:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1302 VKEVLPE 1308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1250 TANKLLLHYNDHSSEKFDLKYQTDFANLP-----EYNLGNTGLLYTPNQFLYDRDSI 1301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1146 GTMLDASQIVSKKAEINPLTLPTVEPLSTSGKKD----SDFSKIAHYQANRALVYKNIEK 1201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      118 NCYVIYALGPDGSGAGYEL-WATDYTDVPASCLEKFNEYAAG------LPVRDVY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9, Application US/08271354
). 5695983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  66 WFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTE-----DGQVLTDVLAFSDD 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          12 GEHQDAWKHLQKLVEEN-----YDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKNVEA 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      02110-2804
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2: Fish & Richardson
225 Franklin Street
                                         08/077,526
, 1993
                                                                                                                                                                                                                                 US/08/271,354
07/629,602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -KSTIVKYGNLVKENSLLYQKELLSAVMMKDDQVITDIVS-NKQ 1249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            25; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7600-401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 81; DB Pred. No. 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        67;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 2052;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
```

```
RESULT 6
US-08-565-861-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence y Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        INFORMATION FOR SEQ ID NO:
                                                                                                                               APPLICATION NUMBER: 08/271
FILING DATE: 06-7UL-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/090
FILING DATE: 09-7UL-193
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/629
                       REFERENCE/DOCKET NUMBER: 00
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                             OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0,
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE/DOCKET NUMBER: 00 TELECOMMUNICATION INFORMATION: TELEPHONE: (617) 542-5070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE: December 18 ATTORNEY/AGENT INFORMATION:
                                                                                            FILING DATE: 18-DEC-1990 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                       PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Miller, Samuel I. APPLICANT: Mekalanos, John GAPPLICANT: Hohmann, Elizabet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MOLECULE TYPE: peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE OF INVENTION:
                                                                                                                                                                                                                                                             CLASSIFICATION: 435
                                                          NAME: Clark, Paul T.
REGISTRATION NUMBER: 30,162
                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: FILING DATE: 01-DEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local Similarity
les 27; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELEFAX:
          TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                COMPUTER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                 COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       165 ASGIISVTEDSDIVVRAEIAHNGEFVYDITITAKNTARAVMTLNKDGSIAGYEI 218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9, Application US/08565861
). 5843426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Clark, Paul
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PDKMYGYNKENAITYQTE----DGQVLTDVLAFSDDNCYVIYALGPDGSGAGYEL 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NNGYWGGPSPVNLTIFGTITEE-QKQEALKEALFKF----DSINFSIIPERIQETIKRAN 164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NDPVWGN----DFTCVGTAAQNLNEDEKNVEAWFMFMNNADTV-----YQHTFEKAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        225 Franklin Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                 U.S.A.
617,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HODMANN, Elizabeth
VENTION: SALMONELLA VACCINES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (617) 542-8906
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        linear
                                                                                                                                                                                                                                                                                                                                                               IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Fish & Richardson P.C
                                                                                                                 UMBER: 07/629,602
18-DEC-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               December 18, 1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8.4%; Score 80; DB 1; Length 246; 23.7%; Pred. No. 0.84; tive 21; Mismatches 46; Indels
                                                                                                                                                                                                                                     08/271,354
                                                                                                                                                                                      08/090,526
                                                                                                                                                                                                                                                                                                            US/08/565,861
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            30,162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               00786/220001
                                             00786/303001
                                                                                                                                                                                                                                                                                                                                             Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
```

Ş

Ω

PDKMYGYNKENAITYQTE---DGQVLTDVLAFSDDNCYVIYALGPDGSGAGYEL 136

```
밁
                                  Š
                                                                                                                                          ; MOLECULE TYPE: peptide PCT-US94-07658-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PCT-US94-07658-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-08-565-861-9
                                                                        Matches
                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 9, Application:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                TELEFAX: (617) 542-890
TELEX: 200154
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS: LENGTH: 246 amino acid
                                                                                                                                                                                             SEQUENCE CHARACTERISTICS:
LENGTH: 246 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: PatentIn Release #1.0, Version SOFTWARE: #1.25 and WordPerfect (Version 5.1) CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: 08/09 FILING DATE: July 9, 1993 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CORRESPONDENCE ADDRESS:
ADDRESSEE: Fish & Richardson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Miller, Samuel I APPLICANT: Mekalanos, John
                                                                                                                                                                                                                                                                                                    TELECOMMUNICATION INFORMATION: TELEPHONE: (617) 542-5070
                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MOLECULE TYPE: peptide
                                                                                                                                                                                TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                    NAME: Clark, Paul T.
REGISTRATION NUMBER: 30,162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                         REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Similarity 23.7 nes 27; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TOPOLOGY:
                                                                                         Local
   110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       110 NNGYWGGPSPVNLTIFGTITEE-QKQEALKEALFKF----DSINFSIIPERIQETIKRAN 164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    165 ASGIISVTEDSDIVVRAEIAHNGEFVYDITITAKNTARAVMTLNKDGSIAGYEI 218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   86 PDKMYGYNKENAITYQTE---DGQVLTDVLAFSDDNCYVIYALGPDGSGAGYEL 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        38 NDPVWGN----DFTCVGTAAQNLNEDEKNVEAWFMFMNNADTV-----YQHTFEKAT 85
                                                                        Similarity 27; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        02110-2804
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Boston
NNGYWGGPSPVNLTIFGTITEE-QKQEALKEALFKF----DSINFSIIPERIQETIKRAN 164
                                    NDPVWGN----YQHTFEKAT 85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Application PC/TUS9407658
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                246 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          225 Franklin Street
                                                                                                                                                                                                                                                                                      (617) 542-8906
                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Miller, Samuel I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8.4%; Score 80; DB
23.7%; Pred. No. 0.84
ative 21; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SALMONELLA VACCINES
                                                                     8.4%; Score 80; DB 5
23.7%; Pred. No. 0.34;
tive 21; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                           08/090,526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PCT/US94/07658
                                                                                                                                                                                                                                                   9:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9:
                                                                                                                                                                                                                                                                                                                                     00786/220001
                                                                                                       DB 5; Length 246;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           . 84;
                                                                      46;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             46; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 246;
                                                                     Indels
                                                                     20;
                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                     ū
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             <u>ن</u>
```

```
₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                US-09-461-325-518
                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-461-325-250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQ ID NOS: 5
SOFTWARE: PATENTIN VET.
SEQ ID NO 250
LENGTH: 490
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 8
US-09-461-325-250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                   GENERAL
                                                                                                                                                                                                                                                                                                     Sequence 518, Application US/09461325A Patent No. 6475753
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Patent No. 64757
                                                                                                                                                                     CURRENT FILING DATE: 1999-12-14
                                                                                                                                                                                          CURRENT APPLICATION NUMBER: US/09/461,325A
                                                                                                                                                                                                                 APPLICANT: Ruben et al. TITLE OF INVENTION: 94 Human Secreted Proteins FILE REFERENCE: PZ029P1
                                                           EARLIER FILING DATE: 1998-06-16 EARLIER APPLICATION NUMBER: 60/089,508
                                                                                                                        EARLIER APPLICATION NUMBER: PCT/US99/13418
EARLIER FILING DATE: 1999-06-15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CURRENT APPLICATION NUMBER: US/09/461,325A CURRENT FILING DATE: 1999-12-14
                                           EARLIER
                                                                                                      EARLIER APPLICATION NUMBER: 60/089,507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EARLIER APPLICATION NUMBER: 60/089,509
EARLIER FILING DATE: 1998-06-16
EARLIER APPLICATION NUMBER: 60/089,510
EARLIER FILING DATE: 1998-06-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Ruben et al.
SARLIER
                    EARLIER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EARLIER APPLICATION NUMBER: 60/090,112 EARLIER FILING DATE: 1998-06-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EARLIER APPLICATION NUMBER: PCT/US99/13418 EARLIER FILING DATE: 1999-06-15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILE REFERENCE: PZ029P1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EARLIER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EARLIER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EARLIER APPLICATION NUMBER: 60/089,507
EARLIER FILING DATE: 1998-06-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EARLIER APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Similarity
                                                                                                                                                                                                                                                                              INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                      322 DIYRLYHSCADPTGCGTGPDARAWDY----QACTE-INLTFASNNVTDMF 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121 VIYAL-----GPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        263 AFTVLA-MMDYPYPTDFLGPLPANPVKVGCDRLLSEAQRITGLRALAGLVYNASGSEHCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               219 REAFRQIKDLFLQGAYDTVR-----W--EFGTC----QPLS-DEKDLTQLFMFARN 262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        250,
             APPLICATION NUMBER: 60/089,509
                                        FILING DATE: 1998-06-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   73 ADTVYQHTFEKATPDKMYGYNKENAITYQTE----DGQVLTDVLAFS------DDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15 QDAWKHLQKL-VEENYDLIKATYKNDPVWGNDF-TCVGTAAQNLNEDEKNVEAWFMFMNN 72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILING DATE: 1998-06-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: 60/089,508 FILING DATE: 1998-06-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ASGIISVTEDSDIVVRAEIAHNGEFVYDITITAKNTARAVMTLNKDGSIAGYEI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Application US/09461325A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ver.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  94 Human Secreted Proteins
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8.4%;
25.9%;
1998-06-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 60/090,113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 79.5; DI Pred. No. 2.7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 490;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels 41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   218
```

122

166

```
RESULT 14
S28179
밁
                          Š
                                                                  B
                                                                                                         Ŷ
                                                                                                                                                   밁
                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          alpha-amylase (EC 3.2.1.1) - Streptomyces lividans
C;Species: Streptomyces lividans
C;Date: 13-Jan-1995 #sequence_revision 13-Jan-1995 #text_change 24-Apr-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Residues: 1-512 <WIL>
A;Residues: 1-512 <WIL>
A;Cross-references: EMBL:Z92828; PIDN:CAB07337.1; GSPDB:GN00019;
A;Experimental source: clone C37A5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              submitted to the EMBL Data Library, March 1997
A;Reference number: Z19180
A;Accession: T19806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           hypothetical protein C37A5.1 - Caenorhabditis elegans
C;Species: Caenorhabditis elegans
C;Date: 15-Oct_1999 #sequence_revision 15-Oct-1999 #text_change 21-Jul-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                       C; Keywords: glycosidase; hydrolase
                                                                                                                                                                                                                                                                                                                                                                  A; Molecule type: DNA
A; Residues: 1-919 <TSA>
                                                                                                                                                                                                                                                                                                                                                                                                                          A; Reference number: S28179;
A; Accession: S28179
                                                                                                                                                                                                                                                                                                                                                                                                                                          R;Tsao, L.S.; Lin, L.L.; Chen, J.C.; Chen, J.H.; Hsu, W.H.
Blophim. Blophys. Acta 1171, 255-262, 1993
A;Title: Cloning and characterization of an alpha-amylase gene from Streptomyces lividar
A;Reference number: S28179; MUID:93144336; PMID:8424949
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         C; Accession: S28179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Map position: 1
A;Introns: 19/3; 60/2; 106/2; 162/1; 265/3; 313/3; 364/2; 388/1; 467/3
C;Superfamily: Caenorhabditis elegans hypothetical protein C01B12.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         C; Accession: T19806
                                                                                                                                                                                                                                                                                                                                                                                                        A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Gene: CESP: C37A5.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                               Start codon: GTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Genetics:
                                                                                                                                                                                                                                                  Query Match
Best Local :
                                                                                                                                                                                                                                                  Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ģ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            249
  210
                                    105
                                                                          158
                                                                                                                                                     101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     91
                                                                                                                                                                                          23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QVLTDVLAFSDDNCYVIYALGPDGSGAGYELWATDYTDVPASCLEKFNE--YAAGLP 160
                                                                          --NKDLKNLISKAHAKGMKVFF---
                                                                                                             NLNEDEKN-----VEAWFMFMNNADTVYQHTFEKAT-PDKMYGYNKENAITYQTED 104
                                                                                                                                                   KGLTEKLDYIKGLGTTSIWMAPIFKNOPVOGTGKDASAGYHGYWITDFTQVDPHFGT---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FTCLFTRQHLDMEDTKTIDYYFPIL---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYT
GQPFDD 215
                                    GQVLTD 110
                                                                                                                                                                                        KLVEENYDLIKA-----TYKNDPV------WGNDFTCV----GTAAQ 54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EALLNPLGEDDDDFECNYLIDRN-IATGMAIVNSKYSDVPEMLADKFNDPSYAPYYP 344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FTCVGTAAQNLNEDEKNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDG 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ----PDIP----QLWAQKITALNYSGL-NLNQYGVASPCRTICT 125
                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8.6%; Suc-
26.5%; Pred
26.5%; Pred
26.5%; Suc-
                                                                                                                                                                                                                                                8.6%;
27.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 81.5;
Pred. No. 15
                                                                                                                                                                                                                                                Score 81.5;
Pred. No. 31;
                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         M1smatches
                                                                          -DVITNHTADVVDYEEKSYDYLSKGAFPYLTKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -TVFQFTF-----FMGWMKV-----A 288
                                                                                                                                                                                                                                                                     DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       46;
                                                                                                                                                                                                                              32;
                                                                                                                                                                                                                                                                   <u>ب</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 512;
                                                                                                                                                                                                                                                                     Length 919;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       23;
                                                                                                                                                                                                                              49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CESP: C37A5.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                            Gaps
                                                                          209
                                                                                                                                                     157
                                                                                                                                                                                                                              7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5
```

```
RESULT
D90538
                                                                                                                                                         밁
                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                   Вþ
                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-1377 <KUR>
A;Cross-references: GB:AL445566; PID:g14089625; PIDN:CAC13385.1; GSPDB:GN00153
A;Experimental source: strain UAB CTIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Title: The complete genome sequence of the murine respiratory pathogen Mycoplasma p A;Reference number: A99512; MUID:21267165; PMID:11353084 A;Accession: D90538
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            hypothetical protein MYPU_2120 [imported] - Mycoplasma pulmonis (strain UAB c;Species: Mycoplasma pulmonis c;Species: Mycoplasma pulmonis c;Date: 24-May-2001 #sequence_revision 24-May-2001 #text_change 03-Aug-2001 C;Accession: D90538
Search completed: August Job time: 15.7771 secs
                                                                             밁
                                                                                                                õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Genetic code:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Gene: MYPU_2120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     R;Chambaud, I.; Heilig, R.; Ferris, S.; Barbe, V.; Samson, D.; Galisson, F.; Nucleic Acids Res. 29, 2145-2153, 2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Genetics:
                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                15
                                                                             1267
                                                                                                                                                         1213
                                                                                                                                                                                                                                     1174
                                                                                                                                                                                                                                                                                                              1114 KRQDAWKSEDKYYYDQKANQNKTIASQYKLDQKVFKIPKNSKDALKEITFLGTTINLTIN 1173
                                                                                                                                                                                                97
                                                                                                                                                                                                                                                                          38
                                                                                                                                                                                                                                                                                                                                                     13 EHQDAWK-------HLQKLVEENYDL-----
                                                                                                                                                                                                                                                                                                                                                                                            41,
                                                                                                                                                                                                                                                                      NDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKEN- 96
                                                                                                                NEYAAGLPVRDVYTSDCLPE 172
                                                                                                                                                         EQIWVRNAQNEEAHAVFKNLLSSDNNSYKGYSLSVD---
                                                                                                                                                                                              ----AITYQTEDGQVLTDVLAFSDDNCYVIYALGPDGSGAGYELWATDYTDVPASCLEKF 152
                                                                                                                                                                                                                                     EDKVWRADFA------DDKEIDKIKKYYK--DLEIQYSFE-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SGC3
                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                             8.6%;
                                                                             NSDLFPD
                  2003, 12:16:32
                                                                                                                                                                                                                                                                                                                                                                                            19;
                                                                                                                                                                                                                                                                                                                                                                                                               Score 81.5;
Pred. No. 5
                                                                             1274
                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                   5
                                                                                                                                                                                                                                                                                                                                                                                                                                   DB
                                                                                                                                                                                                                                                                                                                                                                                            61;
                                                                                                                                                                                                                                                                                                                                                                                                                               Ņ
                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1377;
                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                         -QINAFDKKKILVRFAKKF 1266
                                                                                                                                                                                                                                                                                                                                                   -----IKATYK 37
                                                                                                                                                                                                                                                                                                                                                                                            79;
                                                                                                                                                                                                                                   -GYTNSNG 1212
                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Moszer,
                                                                                                                                                                                                                                                                                                                                                                                            8
```

THIS PAGE BLANK (USPTO)

```
RESULT 14
US-08-284-941-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-388-413B-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-388-413B-6
                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 2, Application US/08284941 Patent No. 5863756
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQ ID NOS: 6
SOFTWARE: PatentIn vers
SEQ ID NO 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 6, Application US/09388413B Patent No. 6485955
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Huber, Brigitte T.
APPLICANT: Underwood, Robert
TITLE OF INVENTION: QUIESCENT CELL DIPEPTIDYL PEPTIDASE:
FILE REFERENCE: 50420 CIP
CURRENT APPLICATION NUMBER: US/09/388,413B
CURRENT FILING DATE: 1999-09-01
                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR APPLICATION NUMBER: 08/944,265 PRIOR FILING DATE: 1997-10-06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH: 537
TYPE: PRT
ORGANISM: Homo sapiens
                               CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/284,941
FILING DATE: 2 August 1994
CLASSIFICATION: 435
                                                                                                                                                                                             STREET: PALO ALTO
CITY: PALO ALTO
STATE: CALIFORNIA
USA
                                                                                                                                                                                                                                                                                                  APPLICANT: BARR, PHILIF U
APPLICANT: KIEFER, MICHAEL C
APPLICANT: KIEFER, MICHAEL C
TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR PACE 4 AND
TITLE OF INVENTION: DACE 4.1 GENE AND POLYPEPTIDES IN CELLS
                                                                                                                                                MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS
                                                                                               COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: PatentIn Release #1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                      ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           347 DIYRLYHSCADPTGCGTGPDARAWDY----QACTE-INLTFASNNVTDMF 391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      265 AFTVLA-MMDYPYPTDFLGPLPANPVKVGCDRLLSEAQRITGLRALAGLVYNASGSEHCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       221 REAFRQIKDLFLQGAYDTVR-----W--EFGTC----QPLS-DEKDLTQLFMFARN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121 VIYAL----GPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      15 QDAWKHLQKL-VEENYDLIKATYKNDPVWGNDF-TCVGTAAQNLNEDEKNVEAWFMFMNN 72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          44;
                                                                                                                                                                                      94306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DIYRLYHSCADPTGCGTGPDARAWDY----QACTE-INLTFASNNVTDMF 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADTVYQHTFEKATPDKMYGYNKENAITYQTE----DGQVLTDVLAFS-----DDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VIYAL ---- GPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AFTVLA-MMDYPYPTDFLGPLPANPVKVGCDRLLSEAQRITGLRALAGLVYNASGSEHCY 346
     NEELEY
                                                                                                                                                                                                                                                 E: COOLEY GODWARD CASTRO HUDDLESON & TATUM FIVE PALO ALTO SQUARE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                 INFORMATION:
                                                                                                                                                Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           version 3.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8.4%;
25.9%;
                                                                                                 Release #1.0,
 RICHARD L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 79.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         M1smatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          No. 3;
                                                                                                   Version #1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         58;
                                                                                                   . 25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 537;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A NOVEL CYTOPLASMIC SERINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-08-284-941-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-08-447-642-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 2, Application US/08447642 Patent No. 5989890
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEFAX: (415) 857-0663
TELEX: 380816 COOLEY PA
INFORMATION FOR SEQ ID NO: 2:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GENERAL
                                                                                                                              PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/284,941
FILING DATE: 2 AUGUST 1994
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TELECOMMUNICATION INFORMATION:
                                                                TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES:
                                                                                 NAME: NEELEY PH.D., RICHARD L. REGISTRATION NUMBER: 30092
REFERENCE/DOCKET NUMBER: CHIR-
                                                                                                                                                                                                    CLASSIFICATION:
                                                                                                                                                                                                                                                                               OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TOPOLOGY:
                             TELEFAX:
                                                                                                                                                                                                                                                                                                  COMPUTER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE/DOCKET NUMBER:
                                                TELEPHONE:
                                                                                                                                                                                                                                                                                                                MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                    COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                    STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                    ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        307 GPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 Similarity
39; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                   PALO ALTO
                                                                                                                                                                                                                                                                                                                                                        94306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          amino acid
                                                                                                                                                                                                                                                                                                                                                                                     CALIFORNIA
               380816 COOLEY PA
                                                                                                                                                                                                                                                                                                                                                                                                                    FIVE PALO ALTO SQUARE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         969 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (415) 843-50
(415) 857-0663
                               (415) 857-0663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         172
                                                                                                                                                                                                                                                                                                IBM PC compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            linear
SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                       COOLEY
                                                                                                                                                                                                                                                                                                                 Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             843-5070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            30092
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          28;
                                                                                 CHIR-009/01US
```

```
SOFTWARE: PATENTIN Release #1.0,
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/447,64
FILING DATE: 23-MAY-1995
                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: BARR, PHILIP J
APPLICANT: KIEFER, MICHAEL C
TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR PACE 4 AND
TITLE OF INVENTION: PACE 4.1 GENE AND POLYPEPTIDES IN CELLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              256 ASANNSYCIVGIAYNAKIGGIRMLDGDVTDVVE-----AKSLGIRPNYIDIYSASW 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               13 EHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKNVE-AW---FM 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              69 FMNNADTVYQHTFEKATPDKMYGYNK----ENAITY-----QTEDGQVLTDVLA 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GKNVVVTILDDGIERNHPDLAPNYDSYASYDVNGNDYDPSPRYDASNENKHGTRCAGEVA 255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QQQEVKRRVKRQVRSD---PQALYFNDPIWSNMWYLHCGDKNSRCRSEMNVQAAWKRGYT 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FSDDNCYVIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVR----DVYTSDC 169
UMBER: US/08/447,642
23-MAY-1995
                                                                                                                                                                                                                                                                                                                                        GODWARD CASTRO HUDDLESON & TATUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 77.5; D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CHIR-009/01US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                 Version #1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    81;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                <u>ب</u>
                                                                                 . 25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 969;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    35;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
```

```
RESULT 11
US-09-345-469-1
                                                                                                                                               В
                                                                                                                                                                          δÃ
                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                        ₽
                                                                                                                                                                                                                                                                                                                      ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                  ; SEQ ID NO 2
; LENGTH: 492
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-794-236-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-794-236-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; ORGANISM: Homo sapiens US-09-461-325-518
                                 Sequence 1, Application US/09345469 Patent No. 6369210
                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 2, Application US/09794236 Patent No. 6337069
                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: PatentIn Ver. SEQ ID NO 518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
APPLICANT: Kapeller-Libermann, Rosana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Monod, Michel
TITLE OF INVENTION: Method of Treating Rhinitis and Sinusitis
FILE REFERENCE: 81985/276823
CURRENT APPLICATION NUMBER: US/09/794,236
CURRENT FILING DATE: 2001-02-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EARLIER FILING DATE: 1998-06-22
EARLIER APPLICATION NUMBER: 60//
EARLIER FILING DATE: 1998-06-22
NUMBER OF SEQ ID NOS: 532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EARLIER FILING DATE: 1998-06-16 EARLIER APPLICATION NUMBER: 60/0 EARLIER FILING DATE: 1998-06-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOFTWARE: PatentIn version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Grouzmann,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ENGTH: 490
                    INFORMATION:
                                                                                                                                                                                                                                                                                    221 REAFRQIKDLFLQGAYDTVR-----W--EFGTC-----QPLS-DEKDLTQLFMFARN
                                                                                                                                               324
                                                                                                                                                                       121 VIYAL----GPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVY
                                                                                                                                                                                                                 265 AFTVLA-MMDYPYPTDFLGPLPANPVKVGCDRLLSEAQRITGLRALAGLVYNASGSEHCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 VIYAL-----GPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     219 REAFRQIKDLFLQGAYDTVR-----W--EFGTC-----QPLS-DEKDLTQLFMFARN 262
                                                                                                                                                                                                                                                       73
                                                                                                                                                                                                                                                                                                                          15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15 QDAWKHLQKL-VEENYDLIKATYKNDPVWGNDF-TCVGTAAQNLNEDEKNVEAWFMFMNN
                                                                                                                                                                                                                                                                                                                                                               44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              44; Conservative
                                                                                                                                                                                                                                                                                                                                                             Similarity 25.9
44; Conservative
                                                                                                                                           DIYRLYHSCADPTGCGTGPDARAWDY----QACTE-INLTFASNNVTDMF
                                                                                                                                                                                                                                                   ADTVYQHTFEKATPDKMYGYNKENAITYQTE----DGQVLTDVLAFS-----DDNCY 120
                                                                                                                                                                                                                                                                                                                        QDAWKHLQKL-VEENYDLIKATYKNDPVWGNDF-TCVGTAAQNLNEDEKNVEAWFMFMNN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ADTVYQHTFEKATPDKMYGYNKENAITYQTE----DGQVLTDVLAFS-----DDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DIYRLYHSCADPTGCGTGPDARAWDY----QACTE-INLTFASNNVTDMF 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AFTVLA-MMDYPYPTDFLGPLPANPVKVGCDRLLSEAQRITGLRALAGLVYNASGSEHCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Lacroix,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Jean-Silvain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8.4%;
                                                                                                                                                                                                                                                                                                                                                         8.4%; Score 79.5; I
25.9%; Pred. No. 2.7;
tive 27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60/090,113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 60/090,112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 79.5;
Pred. No. 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                            DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              58;
                                                                                                                                                                                                                                                                                                                                                             58;
                                                                                                                                                                                                                                                                                                                                                                                            Length 492;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 490;
                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          41;
                                                                                                                                                                                                                                                                                                                                                             41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                      264
                                                                                                                                                                                                                                                                                                                        72
                                                                                                                                                                                                                 323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  321
```

```
δõ
                                                          ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δã
                                                                                                                                                                                                              US-09-461-325-219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 12
US-09-461-325-219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-345-469-1
                                                                                                                                    Matches
                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                     SEQ ID NO 219
LENGTH: 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQ ID NO 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Patent No. 647575
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 219,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILE REFERENCE: PZ029P1
CURRENT APPLICATION NUMBER: US/09/461,325A
CURRENT FILING DATE: 1999-12-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Williamson, Mark
TITLE OF INVENTION: 22012, A No. 6369210e.
FILE REFERENCE: 5800-38
CURRENT APPLICATION NUMBER: US/09/345,469
CURRENT FILING DATE: 1999-06-30
                                                                                                                                                                                                                                                                                                                            EARLIER FILING DATE: 1998-06-22 NUMBER OF SEQ ID NOS: 532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EARLIER APPLICATION NUMBER: PCT/US99/13418
EARLIER FILING DATE: 1999-06-15
EARLIER APPLICATION NUMBER: 60/089,507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE OF INVENTION: 94 Human Secreted Proteins
                                                                                                                                                                                                                                                                                                                                                             EARLIER FILING DATE: 1998-0 EARLIER APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                       EARLIER FILING DATE: 1998-06-16 EARLIER APPLICATION NUMBER: 60/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EARLIER APPLICATION NUMBER: 60/
EARLIER FILING DATE: 1998-06-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS: 4
SOFTWARE: FastSEQ for Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                    EARLIER APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EARLIER FILING DATE: 1998-06-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: MacBeth, Kyle J
                                                                                                                                                                                                                              ORGANISM: Homo
                                                                                                                                                                                                                                                                                                                                                                                                                      EARLIER FILING DATE: 1998-06-
                                                                                                                                                                                                                                                      TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: PRT
ORGANISM: Homo
                                                                                                                                                                                                                                                                   LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LENGTH: 492
                                                                                                                                                      Local
                                                        244 REAFRQIKDLFLQGAYDTVR-----W--EFGTC-----QPLS-DEKDLTQLFMFARN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        324 DIYRLYHSCADPTGCGTGPDARAWDY----QACTE-INLTFASNNVTDMF 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121 VIYAL-----GPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      221 REAFRQIKDLFLQGAYDTVR------W--EFGTC-----QPLS-DEKDLTQLFMFARN 264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: 60/089,509
73 ADTVYQHTFEKATPDKMYGYNKENAITYQTE----DGQVLTDVLAFS----
                                                                                15 QDAWKHLQKL-VEENYDLIKATYKNDPVWGNDF-TCVGTAAQNLNEDEKNVEAWFMFMNN 72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 44;
                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ADTVYQHTFEKATPDKMYGYNKENAITYQTE----DGQVLTDVLAFS------DDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ruben et al.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AFTVLA-MMDYPYPTDFLGPLPANPVKVGCDRLLSEAQRITGLRALAGLVYNASGSEHCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Application US/09461325A
                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sapiens
                                                                                                                                                                                                                                                                                                                                                                                   1998-06-22
                                                                                                                                                      8.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8.4%;
25.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                       60/089,510
                                                                                                                                                                                                                                                                                                                                                                 60/090,113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60/089,508
                                                                                                                                                                                                                                                                                                                                                                                                    60/090,112
                                                                                                                                27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 27;
                                                                                                                                  Score 79.5; DE
Pred. No. 2.9;
27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 79.5;
Pred. No. 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                6369210el
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Human Carboxypeptidase
                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 4;
                                                                                                                                  58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 58;
                                                                                                                                                                       Length 515;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 492;
                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                  41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 41;
                     -DDNCY 120
                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                          287
```

```
SEQUENCE CHARACTERISTICS:
LENGTH: 969 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-447-642-2
                                                                                            Ş
                                                                                                                              밁
                                                                                                                                                        Ş
                                                                                                                                                                                             밁
                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                           밁
Search completed: August 1, 2003, 12:17:19 
 Job time : 16.1048 secs
                                                                 밁
                                                                                                                                                                                                                                                                                                                           Query Match. 8.1%; Score 77.5; DB 2; Length 969; Best Local Similarity 21.3%; Pred. No. 12; Matches 39; Conservative 28; Mismatches 81; Indels 35; Gaps
                                                                                              170 LPE 172
                                                                1:
307 GPD 309
                                                                                                                                                   114 FSDDNCYVIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVR----DVYTSDC 169
                                                                                                                                                                                                                                                           256 ASANNSYCIVGIAYNAKIGGIRMLDGDVTDVVE-----AKSLGIRPNYIDIYSASW 306
                                                                                                                                                                                              196 GKNVVVTILDDGIERNHPDLAPNYDSYASYDVNGNDYDPSPRYDASNENKHGTRCAGEVA 255
```

THIS PAGE BLANK (198773)

```
S
                                                                                                                                                                                                                                                                                                                                                                                                                                          뭥
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 á
                                                                                                                                                                                                                                                                                      US-08-790-912-3
                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                              Sequence 3, Application US/08790912
Patent No. 5976542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Begt
                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEFAX: (215) 567-2991
TELEX: 831-494
INFORMATION FOR SEQ ID NO: 4:
                                                    CORRESPONDENCE ADDRESS:
ADDRESSEE: PANITCH SCHWARZE JACOBS & NADEL, P.C
STREET: 1601 Market Street, 36th Floor
CITY: Philadelphia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 60/026,939
FILING DATE: 23-SEP-1996
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOPTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE/DOCKET NUMBER: 76
TELECOMMUNICATION INFORMATION:
TELEPHONE: (215) 567-2020
                                                                                                                                  NUMBER OF SEQUENCES:
                                                                                                                                                  TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR TREATMENT INTELL OF INVENTION: OF STREPTOCOCCUS PNEUMONIAE INFECTION
                                                                                                                                                                                        APPLICANT: Welser, Jeffrey N. APPLICANT: Plaut, Andrew G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MOLECULE TYPE:
  COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CITY: Philadelphia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TOPOLOGY: 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: US/08/790,912 FILING DATE: 29-JAN-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME: Leary, Kathryn REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1370 DRYRNNEHR-AGAELNKFVEDNAQETAKRQRDHYDYWYRILDEQGREKLYRNILVYDAYK 1428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1429 ----FGDDTTV----
                                                                                                                                                                                                                                                                                                                                                                1521 AKGLLQAP 1528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19103-2398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             amino acid
19103-2398
                                                                                                                                                                                                                                                                                                                                                                                                    ATDYTDVP 145
                                                                                                                                                                                                                                                                                                                                                                                                                                          SVYYMGYRMLDKDGAITYTHEMTHD---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                KMY--GY---NKENAITY---QTEDGQVLTDVLAFSDDNCYVIYALGPDG---SGAGYELW 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMFMNNA------DTVYQHTFEKATPD 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DEAANGEHQDAWKHLQKLVEEN-----YD----YD-----
                                    Pennsylvania
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pennsylvania
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      E: PANITCH SCHWARZE JACOBS & NADEL, P.C. 1601 Market Street, 36th Floor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1861 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    29-JAN-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8.6%; Score 82; DB 27.1%; Pred. No. 10;
                                                                                                                                  10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 36,317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7600-401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -DKATVEAQFDSSNPAMKYFFGPVGNKVVHNKHGAYATGD 1474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                          -----SDNEIY----LGGYGRRSGLGPEFF 1520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 2; Length 1861;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ----LIKATYK 37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; MOLECULE TYPE: protein US-08-790-912-3
                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 4
US-08-790-912-2
                                                                                                                                                                                                                                                                                                                                                      Sequence 2, Approximately No. 5976542
                                                                                                                                                                                                                                                                                                    Patent No. 5976542
GENERAL INFORMATION:
APPLICANT: Welser, Jeffrey N.
APPLICANT: Plaut, Andrew G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match 8.5
Best Local Similarity 24.1
Matches 45; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEX: 831-494
INFORMATION FOR SEQ ID NO:
          COMPUTER READABLE FORM:
MEDIUM TYPE: Ploppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE CHARACTERISTICS:
LENGTH: 1964 amino aci
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELECOMMUNICATION INFORMATION: TELEPHONE: (215) 567-2020 TELEFAX: (215) 567-2991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 60/026,939
FILING DATE: 23-SEP-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                          CORRESPONDENCE ADDRESS:
ADDRESSEE: PANITCH S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR TREATMENT TITLE OF INVENTION: OF STREPTOCOCCUS PNEUMONIAE INFECTION
                                                                                                                                                                                                                                                NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: PatentIn Release #1.0
                                                                                                                                                  STREET: 1601 Marke:
CITY: Philadelphia
STATE: Pennsylvania
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER: FILING DATE: 29-JAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME: Leary, Kathryn REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CLASSIFICATION:
                                                                                                                                COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1177 TANKLLLHYNDHSSEKFDLKYQTDFANLP-----EYNLGNTGLLYTPNQFLYDRDSI 1228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1129 LLPFYN-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1073 GTMLDASQIVSKKAEINPLTLPTVEPLSTSGKKD----SDFSKIAHYQANRALVYKNIEK 1128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1229 VKEVLPE 1235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             118 NCYVIYALGPDGSGAGYEL-WATDYTDVPASCLEKFNEYAAG------LPVRDVY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   166 TSDCLPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   12
                                                                                                              19103-2398
APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WEMEMNNADIVYOHTEEKATPDKMYGYNKENAITYQTE-----DGOVLTDVLAFSDD 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GEHQDAWKHLQKLVEEN----YDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKNVEA
                                                                                                                                                                                                                                                                                                                                                                                Application US/08790912
                                                                                                                                                  Pennsylvania
                                                                                                                                                                                      1601 Market Street,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1964 amino acids
                                                                                                                                  USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PatentIn Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         linear
                                                                                                                                                                                        PANITCH SCHWARZE JACOBS & NADEL, P.C. 01 Market Street, 36th Floor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DMBER: US/08/790,912
29-JAN-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8.5%; Score 81; DB 24.1%; Pred. No. 14;
                                                                                                                                                                                                                                                  10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  36,317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -KSTIVKYGNLVKENSLLYQKELLSAVMMKDDQVITDIVS-NKQ 1176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  7600-4U1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                  Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2;
```

67;

50;

Gaps

65 80

Length 1964; Indels

```
Result
                                                                                                                                                                                                                                                                                                                                                                                               Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                           Minimum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                 Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                           score g
                                                                                                                                                                                                                                                                                                                                                                                                                                   DB
DB
seq
                                                                                                                                                                                                                                                                                          No. is the number of results predicted by chance to have a greater than or equal to the score of the result being printed, s derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                  length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                             5 5 4 6 6 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-087-195-6
952
1 DKPVWADEAANGE
                                                                                                                                                                                                                                                 Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            328717 seqs, 42310858 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           August 1,
                                                                                                                                                                                                                                                         Query
                                                                                                                                                                                                                                                                                                                                                                                 Issued_Patents_AA: *
        7777778888888888888888888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DKPVWADEAANGEHQDAWKH.....NEYAAGLPVRDVYTSDCLPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Copyright
٠,
                                                                                                                                                                                                                                                                                                                          /cgn2_6/ptodata/1/iaa/5A_COMB.pep:*
/cgn2_6/ptodata/1/iaa/5B_COMB.pep:*
/cgn2_6/ptodata/1/iaa/6A_COMB.pep:*
/cgn2_6/ptodata/1/iaa/6B_COMB.pep:*
/cgn2_6/ptodata/1/iaa/B_COMB.pep:*
/cgn2_6/ptodata/1/iaa/PCTUS_COMB.pep:*
/cgn2_6/ptodata/1/iaa/backfiles1.pep:*
                                                                                                                                                                                                                                                  Length
2003, 12:15:04; Search time 13.1048
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GenCore version (c) 1993 - 2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gapext 0.5
      US-09-131-750-29
US-08-790-912-3
US-08-790-912-3
US-08-790-912-2
US-08-271-354-9
US-08-271-354-9
US-09-461-325-250
US-09-461-325-251
US-09-461-325-219
US-09-461-325-219
US-09-388-4138-6
US-09-388-4138-6
US-09-386-4178-2
US-09-386-4278-2
US-09-386-20-151-12
US-09-252-991A-27584
US-08-220-151-12
US-08-220-151-12
US-08-220-151-12
US-08-413-118-14
US-08-413-118-14
                                                                                                                                                                                                                                                 IJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (without alignments)
555.330 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5.1.6
Compugen Ltd.
                                                                                                                                                                                                                                                Description
                       Sequence
Sequence
Sequence
Sequence
Sequence
                                                                  Sequence
Sequence
                                                                                                     Sequence
Sequence
                                                                                                                      Sequence
Sequence
Sequence
                                                                                                                                                                 Sequence
Sequence
                                                                                                                                                                                   Sequence
Sequence
                                                                                                                                                                                                                     Sequence 29, Appli
Sequence 4, Appli
               Sequence
                                                                                     Sequence
                                                                                             Sequence
                                                                                                                                                 Sequence
                                                                                                                                                          Sequence
                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Seconds
              9, Appli
9, Appli
9, Appli
250, App
518, App
250, Appli
1, Appli
1, Appli
2, Appli
2, Appli
2, Appli
2, Appli
3, Appli
6, Appli
2, Appli
2, Appli
2, Appli
2, Appli
2, Appli
3, Appli
12, Appli
12, Appli
12, Appli
                                                                                                                                                                                                    Appli
Appli
Appli
                                                                                                                              Ωy
                                                                                                                                                 В
                                                                                                                                                                Ş
                                                                                                                                                                                    밁
                                                                                                                                                                                                  δÃ
```

	_	_			_												
5	14	13	42	11	0	39	38	37	36	35	34	33	32	31	30	29	28
73	73	73	73	73.5	73.5	73.5	73.5	73.5	73.5	74	74	74	74	74	74.5	74.5	74.5
7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
2037	182	182	182	915	915	915	881	881	337	547	547	547	547	547	1394	459	459
ω	4	4	ω	4	N	N	N	N	4	4	Н	۲	Н	۳	ω	w	ω
US-09-306-998-3	US-09-710-299-2	US-09-160-567-2	US-08-828-741B-2	US-09-214-555B-7	US-08-976-838-18	US-08-525-940-18	US-08-976-838-21	US-08-525-940-21	US-09-134-001C-3207	US-09-347-878-36	US-08-712-057-8	US-08-475-694-8	US-08-393-785-8	US-08-083-948-8	US-09-213-053-2	US-09-213-053-6	US-08-473-446-14
Sequence 3, Appli	Sequence 2, Appli	Sequence 2, Appli	Sequence 2, Appli	Sequence 7, Appli	`	•	Sequence 21, Appl	•	$\stackrel{\sim}{}$	Sequence 36, Appl		Sequence 8, Appli	Sequence 8, Appli	Sequence 8, Appli	Sequence 2, Appli	Sequence 6, Appli	Sequence 14, Appl

ALIGNMENTS

; TYPE: PRT; ORGANISM: Homo US-09-131-750-29 RESULT 2 US-08-790-912-4 Sequence 4, Application US/08790912
Patent No. 5976542
GENERAL INFORMATION:
APPLICANT: Weiser, Jeffrey N.
APPLICANT: Weiser, Jeffrey N.
APPLICANT: Plaut, Andrew G.
TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR TREATMENT
TITLE OF INVENTION: OF STREPTOCOCCUS PNEUMONIAE INFECTION
NUMBER OF SEQUENCES: 10 SOFTWARE: FastSEQ for Windows Version 4.0 SEQ ID NO 29 Matches GENERAL INFORMATION: Sequence 29, Application Patent No. 6361964 Query Match APPLICANT: Kaiser, Chris A.
APPLICANT: Frand, Alison R.
APPLICANT: Frand, Alison R.
TITLE OF INVENTION: EUKARAYOTIC DISULFIDE BOND-FORMING
TITLE OF INVENTION: PROTEINS AND RELATED MOLECULES AND METHODS
FILE REFERENCE: 01997/502002
CURRENT APPLICATION NUMBER: US/09/131,750A
CURRENT FILING DATE: 1998-08-10
CARLIER FILING DATE: 1998-08-12
EARLIER FILING DATE: 1997-08-12
NUMBER OF SEQ ID NOS: 29 LENGTH: 469 CORRESPONDENCE ADDRESS: Local Similarity 144 204 I--YEENCFKPQTIKRPLNPLASGQGTSEENTFYSWLEGLCVEKRAFYRLISGL 112 LAFSDDNCY----VIYALGPDGSGAGYELWATDYTDVPASCLEK--FNEYAAGL 159 56 LNED-EKNYEAWFMFMNNADTVYQHTFEKATPDKMYG---YNKENAITYQTEDGQVLTDV 111 86 3 PVWADEAANGEHQDAWKHLQKLVEENYDLIK-ATYKNDPVWGN-----DFTCVGTAAQN 55 LSEETQKAVLQWTKHDDSSDNFCEADDDTQSPEAEYVDLLLNPERYTGYKGPDAWKIWNV PIWNDISQCGRRDCAVKPCQS--DEVPDGIKSASYKYSEEANNLIEECEQAERLGAVDES Conservative sapiens, 8.98; US/09131750A Mus musculus, Rattus norvegius 29; Score 84.5; DB 4; Pred. No. 0.69; 9; Mismatches 80; 80; Length 469; Indels 21; Gaps 143 203

FILING DATE: 2000-11-08
APPLICATION NUMBER: PCT/US00/13504
FILING DATE: 2000-05-18
APPLICATION NUMBER: 60/178,770
FILING DATE: 2000-01-28

APPLICATION NUMBER: 09/707,936 FILING DATE: 2000-11-08

```
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QY
                                                                                                                                                                                                                                                                         US-09-961-403-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-961-403-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; ORGANISM: Homo sapiens US-10-103-196-17
                                                                                                                                                                                                                                                                                                        SEQ ID NO 6
LENGTH: 969
TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                        Query Match
Best Local :
                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: PatentIn Ver. SEQ ID NO 17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: SCOTTI, SIMONE TITLE OF INVENTION: METHOD FOR IN VITRO DIAGNOSIS OF ENDOMETRIOSIS FILE REFERENCE: SCH-1789
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CURRENT APPLICATION NUMBER: US/09/961,403
CURRENT FILING DATE: 2001-09-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: HE-STUMPP, HOLGER
APPLICANT: HAENDLER, BERNARD
APPLICANT: KRAETZSCHMAR, JOERN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS: 15 SOFTWARE: PatentIn Ver. :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION NUMBER: 60/135,122 PRIOR FILING DATE: 1999-05-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQ ID NOS: 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: 60/137,797 FILING DATE: 1999-06-03
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FILING DATE: 2000-01-28
APPLICATION NUMBER: 60/149,447
FILING DATE: 1999-08-18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: 60/138,573 FILING DATE: 1999-06-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           210 VDQQIVIYTKGCVPQ 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              125 LGPDGSGAGYELWATDYT-----DVPASCLEKFNEYAAGLPVRDV---------
13 EHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKNVE-AW---FM 68 : |: |: |: | | || : | : : : | | | | : | : | : | | | : | : | | | : | : | | | : | : | | : | : | | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    99 ELFSFLELTAGVLAFVFKDWIKDQLYFFINNNIRAYR--DDIDLQNLIDFTQEYWQCCGA 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           67 -- FMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCYVIYA 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         39 WAWNEKGVLSNISSITDLGGFDPVWLFLVVGGVMFILGFAGCIGAYGKTLSFSSFFLCSW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   18 WKHLQKLYEENYDLIKATYKNDPVW-----GNDFT-----CVGTAAQNLNEDEKNVEAW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 Similarity
43; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               268
                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Application US/09961403
No. US20030077589A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FGADDWNLNIYFNCTDSNASRERCGVPFSCCTKD-----PAEDVINTQCGYDARQKPE 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -----YTSDCLPE 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WINTERHAGER, ELKE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REGIDOR, PEDRO
                                                                                                                 8.1%; Score 77.5; ilarity 21.3%; Pred. No. 14; Conservative 28; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8.2%;
ilarity 22.1%;
Conservative 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 19;
                                                                                                         28; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 78.5;
Pred. No. 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ed. No. 1.8;
Mismatches
                                                                                                                                                                                           DB 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 84;
                                                                                                                 81;
                                                                                                                                                                                           Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 268;
                                                                                                                 Indels 35; Gaps
                                                                                                                                                                                               969;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  164
```

```
Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QY
                                                                                                                                                                                                                                                                                                                                                                                                              멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; ORGANISM: Streptomyces avermitilis US-10-156-761-13509
                                                                                                                                                                                                                                                                                                                               RESULT 15
US-09-989-545-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 14
US-10-156-761-13509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: JP 2001-204089
PRIOR FILING DATE: 2001-05-30
PRIOR APPLICATION NUMBER: JP 2001-272697
PRIOR FILING DATE: 2001-08-02
NUMBER OF SEQ ID NOS: 15109
SEQ ID NO 13509
LENGTH: 1806
                                                                                                                                                                                 APPLICANT: Lehar, APPLICANT: Manning APPLICANT: Coyle, APPLICANT: Gutier
                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                   Sequence 14, Application US/09989545 Patent No. US20020164697A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 13509, Application US/10156761 Publication No. US20030119018A1
                                                                                                                                       APPLICANT: Coyle, Anthony J.
APPLICANT: Gutterrez Ramos, Jose-Carlos
TITLE OF INVENTION: No. US20020164697Alel Th2-Specific Molecules and Uses Thereof
FILE REFERENCE: 5800-10B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                 CURRENT APPLICATION NUMBER: US/09/989,545
CURRENT FILING DATE: 2001-11-20
NUMBER OF SEQ ID NOS:
                PRIOR APPLICATION NUMBER: 09/258,670 PRIOR FILING DATE: 1999-02-26
                                                         PRIOR APPLICATION NUMBER: 09/168,229
PRIOR FILING DATE: 1998-10-07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT APPLICATION NUMBER: US/10/156,761
CURRENT FILING DATE: 2002-05-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES FILE REFERENCE: 249-262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: OMURA, APPLICANT: IKEDA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            134 FKNQPVQGTGKDASAGYHGYWITDFTKVDPHFGT-----NKDLETLISKAHAKGMKVFF-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   307 GPD 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           170 LPE 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          114 FSDDNCYVIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVR----DVYTSDC 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    196 GKNVVVTILDDGIERNHPDLAPNYDSYASYDVNGNDYDPSPRYDASNENKHGTRCAGEVA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                139 QQQEVKRRVKRQVRSD----PQALYFNDPIWSNMWYLHCGDKNSRCRSEMNVQAAWKRGYT 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  36 YKNDPV-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                  69 FMNNADTVYQHTFEKAT-PDKMYGYNKENAITYQTEDGQVLTD 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                              -----DVITNHTADVVDYEEKSYGYLSKGAFPYLTKDGRPFDD 225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ASANNSYCIVGIAYNAKIGGIRMLDGDVTDVVE----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FMNNADTVYQHTFEKATPDKMYGYNK----ENAITY---
                                                                                                                                                                                                                       Manning, Stephen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SHIBA, TADAYOSHI
SAKAKI, YOSHIYUKI
HATTORI, MASAHIRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ISHIKAWA, JUN
HORIKAWA, HIROSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                             Sophie
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HARUO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8.1%;
27.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  --WGNDFTCV----GTAAQNLNED------EKNVEAWFM 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 77.5;
Pred. No. 34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NO.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 1806;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -AKSLGIRPNYIDIYSASW 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -QTEDGQVLTDVLA 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    255
```

```
ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 9
US-10-068-134-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; TYPE: PRT ; ORGANISM: Homo sapiens US-10-068-134-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-012-542-219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQ ID NO 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 1, Application US/10068134 Publication No. US20020156264A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Kapeller-Libermann, Rosana
APPLICANT: MacBeth, Kyle J.
APPLICANT: MacBeth, Kyle J.
APPLICANT: Williamson, Mark
TITLE OF INVENTION: 22012, A No. US20020156264Alel Human Carboxypeptidase
FILE REFERENCE: 5800-38
CURRENT APPLICATION NUMBER: US/10/068,134
CURRENT FILLING DATE: 2002-02-06
PRIOR APPLICATION NUMBER: US/09/345,469
PRIOR APPLICATION NUMBER: US/09/345,469
PRIOR FILING DATE: 1999-06-30
                                                                                                                                                                                                                                CURRENT FILING DATE: 2001-12-12
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: 09/461,325
PRIOR FILING DATE: EARLIER FILING DATE: 1999-12-14
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: 60/089,507
PRIOR FILING DATE: EARLIER FILING DATE: 1998-06-16
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: 60/089,508
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: 60/089,508
PRIOR FILING DATE: EARLIER FILING DATE: 1998-06-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                  CURRENT APPLICATION NUMBER: US/10/012,542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Ruben et al. TITLE OF INVENTION: 94 Human Secreted Proteins FILE REFERENCE: PZ029P1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS: 4 SOFTWARE: FastSEQ for Windows Version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH: 492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 / Match 8.4%;
Local Similarity 25.9%;
A APPLICATION NUMBER: EARLIER APPLICATION NUMBER: 60/089,509
FILING DATE: EARLIER FILING DATE: 1998-06-16
A APPLICATION NUMBER: EARLIER APPLICATION NUMBER: 60/089,510
FILING DATE: EARLIER FILING DATE: 1998-06-16
APPLICATION NUMBER: EARLIER APPLICATION NUMBER: 60/090,112
FILING DATE: EARLIER FILING DATE: 1998-06-22
APPLICATION NUMBER: EARLIER APPLICATION NUMBER: 60/090,113
FILING DATE: EARLIER FILING DATE: 1998-06-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121 VIYAL-----GPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              265 AFTVLA-MMDYPYPTDFLGPLPANPVKVGCDRLLSEAQRITGLRALAGLVYNASGSEHCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                221 REAFRQIKDLFLQGAYDTVR-----W--EFGTC-----QPLS-DEKDLTQLFMFARN 264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      73 ADTVYOHTFEKATPDKMYGYNKENAITYQTE----DGQVLTDVLAFS------DDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           15 QDAWKHLQKL-VEENYDLIKATYKNDPVWGNDF-TCVGTAAQNLNEDEKNVEAWFWFMNN 72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DIYRLYHSCADPTGCGTGPDARAWDY----QACTE-INLTFASNNVTDMF 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DIYRLYHSCADPTGCGTGPDARAWDY----QACTE-INLTFASNNVTDMF 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VIYAL-----GPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AFTYLA-MMDYPYPTDFLGPLPANPYKYGCDRLLSEAQRITGLRALAGLYYNASGSEHCY 321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Application US/10012542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US20030044851A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 79.5; D
Pred. No. 3.3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 492;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   41;
```

```
; LENGTH: 515
; TYPE: PRT
; ORGANISM: Homo s
US-10-012-542-219
                                                                                                              RESULT 12
US-10-103-196-17
Sequence 17, Application US/10103196
Publication No. US20030050466A1
                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; TYPE: PRT ; ORGANISM: Homo sapiens US-10-233-745-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-233-745-6
                                   GENERAL INFORMATION:
APPLICANT: N1 et al.
TITLE OF INVENTION: TM4SF Polynucleotides,
FILE REFERENCE: PT008P1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE: PatentIn version 3.1
SEQ ID NO 6
LENGTH: 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 6, Application US/10233745 Publication No. US20030027282A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQ ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/10/233,745
CURRENT FILING DATE: 2002-09-03
PRIOR APPLICATION NUMBER: US/09/388,413
PRIOR FILING DATE: 1999-09-01
PRIOR APPLICATION NUMBER: 08/944,265
PRIOR FILING DATE: 1997-10-06
NUMBER OF SEQ ID NOS: 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Huber, Brigitte T.
APPLICANT: Underwood, Robert
TITLE OF INVENTION: QUIESCENT CELL DIPEPTIDYL
FILE REFERENCE: 50420 CIP
CURRENT APPLICATION NUMBER: US/10/103,196
CURRENT FILING DATE: 2002-03-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Match 8.4%;
Local Similarity 25.9%;
tes 44; Conservative 27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                              121 VIYAL-----GPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVY 165
                                                                                                                                                                                                                                                                                                                      265
                                                                                                                                                                                                                                                                                                                                                                                                 221 REAFRQIKDLFLQGAYDTVR-----W--EFGTC----QPLS-DEKDLTQLFMFARN 264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              347 DIYRLYHSCADPTGCGTGPDARAWDY----QACTE-INLTFASNNVTDMF 391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121 VIYAL-----GPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        244 REAFRQIKDLFLQGAYDTVR-----W--EFGTC----QPLS-DEKDLTQLFMFARN
                                                                                                                                                                                                                                         324 DIYRLYHSCADPTGCGTGPDARAWDY----QACTE-INLTFASNNVTDMF 368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     44; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                         15 QDAWKHLQKL-VEENYDLIKATYKNDPVWGNDF-TCVGTAAQNLNEDEKNVEAWFMFMNN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                73 ADTVYOHTFEKATPDKMYGYNKENAITYOTE----DGQVLTDVLAFS------DDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                15 QDAWKHLQKL-VEENYDLIKATYKNDPVWGNDF-TCVGTAAQNLNEDEKNVEAWFMFMNN 72
                                                                                                                                                                                                                                                                                                                      AFTVLA-MMDYPYPTDFLGPLPANPVKVGCDRLLSEAQRITGLRALAGLVYNASGSEHCY
                                                                                                                                                                                                                                                                                                                                               ADTVYQHTFEKATPDKMYGYNKENAITYQTE----DGQVLTDVLAFS------DDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AFTVLA-MMDYPYPTDFLGPLPANPVKVGCDRLLSEAQRITGLRALAGLVYNASGSEHCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8.4%;
25.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 79.5; DB Pred. No. 3.8; 27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 79.5;
Pred. No. 3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .
6;
                                                        Polypeptides,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PEPTIDASE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels 41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 537;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                          and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A NOVEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     41;
                                                        Antibodies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CYTOPLASMIC
                                                                                                                                                                                                                                                                                                                                                                                                                                         72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             346
```

Local Similarity

```
US-10-012-542-250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; TYPE: PRT; ORGANISM: MS-HBP 1
US-10-087-195-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-087-195-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                       Sequence 250, Application US/10012542 Publication No. US2003004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match 28.1%; Score 267.5; DB 14; Best Local Similarity 39.3%; Pred. No. 1.5e-21; Matches 70; Conservative 20; Mismatches 77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE: FastSEQ for Windows Version 4.0 SEQ ID NO 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 8, Application US/10087195 Publication No. US20020193306A1
                    CURRENT FILING DATE: 2001-12-12
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: PRIOR FILING DATE: LARLIER FILING DATE: 1999-12-14
PRIOR FILING DATE: EARLIER EARLIER APPLICATION NUMBER: PRIOR ELING DATE: LARLIER FILING DATE: 1998-06-16
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: PRIOR EILING DATE: EARLIER FILING DATE: 1998-06-16
                                                                                                                                                                      CURRENT APPLICATION NUMBER: US/10/012,542 CURRENT FILING DATE: 2001-12-12
                                                                                                                                                                                                                    APPLICANT: Ruben et al.
TITLE OF INVENTION: 94 Human Secreted Proteins
FILE REFERENCE: PZ029P1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/10/087,195
CURRENT FILING DATE: 2002-03-01
PRIOR APPLICATION NUMBER: PCT/GB00/03287
PRIOR FILING DATE: 2000-08-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Nuttall, Patricia, Anne
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Allergic Rhinitis
FILE REFERENCE: 2488-1-004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRIOR APPLICATION NUMBER: PRIOR FILING DATE: 1999-09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQ ID NOS: 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ENGTH: 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120 YVIYALGPDGSGAG-YELWAT-DYTDVPASCLEKFNEYAA---GLPVRDVYT-SDCLP 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                               120 DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120 YVIYALGPDGSGAG-YELWAT-DYTDVPASCLEXFNEYAA---GLPVRDVYT-SDCLP 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            60 LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       63 VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED--GQVLTDVLAFSD-DNC 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63 VEAWEMEMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED--GQVLTDVLAFSD-DNC 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3 PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1999-09-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 39.3%; --- 20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9920673.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred. No. 1.5e-21;
0; Mismatches 77;
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 14; Length 182;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                60/089,508
                                                                                                                                             09/461,325
                                                                                             60/089,507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                119
```

```
Ş
                                               뮹
                                                                                    VΩ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                        US-10-012-542-518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-012-542-518; Sequence 518; A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; ORGANISM: Homo sapiens US-10-012-542-250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: Pate
SEQ ID NO 250
LENGTH: 490
                                                                                                                                    Best Lo
                                                                                                                                                                                                                                                                                                             SOFTWARE: Pa
                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: PRIOR FILING DATE: EARLIER FILING DATE: 1998-06-16
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER: PRIOR FILING DATE: EARLIER FILING DATE: 1998-06-16
                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: EARLIER PRIOR FILING DATE: EARLIER FILING PRIOR APPLICATION NUMBER: EARLIER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR FILING DATE: EARLIER FILING DATE: 1999-12-14
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER:
PRIOR FILING DATE: EARLIER FILING DATE: 1998-06-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION NUMBER: US/10/012,542
CURRENT FILING DATE: 2001-12-12
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Ruben et
TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR FILING DATE: EARLIER FILING DATE: 1998-06-16
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER:
PRIOR FILING DATE: EARLIER FILING DATE: 1998-06-16
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER:
PRIOR FILING DATE: EARLIER FILING DATE: 1998-06-22
PRIOR APPLICATION NUMBER: EARLIER APPLICATION NUMBER:
                                                                                                                                                                                                                                                                    LENGTH:
TYPE: PR
                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION NUMBER: PRIOR FILING DATE: EARLIE
                                                                                                                                                                                                                                                                                                                                                                                                 PRIOR FILING DATE: EARLIER FILING PRIOR APPLICATION NUMBER: EARLIER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR FILING DATE: EARLIER FILING NUMBER OF SEQ ID NOS: 532
                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQ ID NOS: 532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FILE REFERENCE: P2029P1
                                                                                                                                                                                                                                           ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: PRT
                                                                                                                                    Local Similarity
nes 44; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity
les 44; Conserv
                                           219 REAFRQIKDLFLQGAYDIVR-----W--EFGTC----QPLS-DEKDLTQLFMFARN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          322 DIYRLYHSCADPTGCGTGPDARAWDY----QACTE-INLTFASNNVTDMF 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            263 AFTVLA-MMDYPYPTDFLGPLPANPVKVGCDRLLSEAQRITGLRALAGLVYNASGSEHCY 321
                                                                                      15 QDAWKHLQKL-VEENYDLIKATYKNDPVWGNDF-TCVGTAAQNLNEDEKNVEAWFMHMNN 72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            15 QDAWKHLQKL-VEENYDLIKATYKNDPVWGNDF-TCVGTAAQNLNEDEKNVEAWFMFMNN
                                                                                                                                                                                                                                                                                           490
                                                                                                                                                                                                                                                                                                                                      PatentIn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PatentIn Ver. 2.0
ADTVYQHTFEKATPDKMYGYNKENAITYQTE----DGQVLTDVLAFS----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VIYAL-----GPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ruben et al
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADTVYQHTFEKATPDKMYGYNKENAITYQTE----DGQVLTDVLAFS-----DDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REAFRQIKDLFLQGAYDTVR-----W--EFGTC-----QPLS-DEKDLTQLFMFARN 262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Application US/10012542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US20030044851A1
                                                                                                                                                                                                                                                                                                                                                                           EARLIER FILING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        94 Human Secreted Proteins
                                                                                                                                  8.4%; Score 79.5; Di
25.9%; Pred. No. 3.3;
Live 27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8.4%; Score 79.5; D
25.9%; Pred. No. 3.3;
Live 27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: DATE: 1998-06-16
                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: DATE: 1998-06-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DATE: 1998-06-22
                                                                                                                                                                           DB 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 15;
                                                                                                                                    58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          58;
                                                                                                                                                                           Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 490;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   09/461,325
                                                                                                                                                                                                                                                                                                                                                                                                    60/090,113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60/089,510
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 60/089,509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60/089,508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60/089,507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60/090,113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60/089,510
                                                                                                                                                                               490;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          41;
    -DDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                    Gaps
                                               262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            72
```

```
PRIOR APPLICATION NUMBER: PCT/GB00/03287

PRIOR FILING DATE: 2002-03-01

PRIOR FILING DATE: 2000-08-24

PRIOR FILING DATE: 2900-08-24

PRIOR FILING DATE: 1999-09-01

NUMBER OF SEQ ID NOS: 8

SOFTWARE: FastSEQ for Windows Version 4.0

SEQ ID NO 6

LENGTH: 172

TYPE: PRT

ORGANISM: FS-HBP1

US-10-087-195-6
                                                                                                                                                                                                                         CURRENT APPLICATION NUMBER: US/10/085,572
CURRENT FILING DATE: 2002-02-27
PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR FILING DATE: 2000-08-24
PRIOR APPLICATION NUMBER: 9920674.0
PRIOR FILING DATE: 1993-09-01
NUMBER OF SEQ ID NOS: 8
SOFTWARE: FASTSEQ for Windows Version 4.0
SEQ ID NO 7
 무
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             맑
                                                                                                                                                      ; ORGANISM: FS-HBP 2
US-10-085-572-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 6, Application US/10087195 Publication No. US20020193306A1 GENERAL INFORMATION:
                                                                                          Query Match
Best Local Similarity
                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Nuttall, Patricia, Anne
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Allergic Rhinitis
FILE REFERENCE: 2488-1-004
CURRENT APPLICATION NUMBER: US/10/087,195
CURRENT FILING DATE: 2002-03-01
                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Nuttall, Patricia, Ann
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Conjunctivitis
FILE REFERENCE: 2488-1-003
                                                                                                                                                                                           TYPE: PRT
                                                                                                                                                                                                           CENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      uence 7, Application US/10085572
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121 VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCLPE 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ucn 100.0%; Score 952; DB 14; al Similarity 100.0%; Pred. No. 4.4e-97; 172; Conservative 0: Mismatchical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61 KNYEAWFMFMNNADTYYQHTFEKATPDKMYGYNKENAITYQTEDGQYLTDVLAFSDDNCY 120
                                                                                                                                                                                                             171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDETCVGTAAQNLNEDE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCLPE 172
                                                                           Conservative
                                                                                          66.2%;
                                                                       20;
                                                                       Score 630; DB 14;
Pred. No. 1.4e-61;
90; Mismatches 37;
                                                                                                            Length 171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 172;
                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                         0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60
                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-087-195-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-087-195-7
                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQ ID NO 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Publication No. US201
GENERAL INFORMATION:
                                                                                                   SEQ ID NO 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                     Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                              FILE REFERENCE: 2488-1-003
CURRENT APPLICATION NUMBER: US/10/085,572
CURRENT FILING DATE: 2002-02-27
PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR FILING DATE: 2000-08-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: PCT/GB00/03287 PRIOR FILING DATE: 2000-08-24 PRIOR APPLICATION NUMBER: 9920673.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Nuttall, Patricia, Anne
APPLICANT: Paesen, Guldo, Christiaan
TITLE OF INVENTION: Treatment of Allergic Rhinitis
                                                                                                                                                                                                                                                                                                                    APPLICANT: Nuttall, Patricia, Ann
APPLICANT: Paesen, Guido, Christian
TITLE OF INVENTION: Treatment of Conjunctivitis
FILE REFERENCE: 2488-1-003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION NUMBER: US/10/087,195
CURRENT FILING DATE: 2002-03-01
                                                                                                                                             NUMBER OF SEQ ID NOS: 8
SOFTWARE: FastSEQ for Windows Version
                                                                                                                                                                                       PRIOR APPLICATION NUMBER: 9920674.0 PRIOR FILING DATE: 1999-09-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR FILING DATE: 19
NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH: 171
TYPE: PRT
ORGANISM: FS-HBP
                                                                                   TYPE: PRT
                                                               ORGANISM: MS-HBP 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121 VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121 VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121 VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL 170
                                                                                                                                                                                                                                                                                                                                                                                                                                           8, Application US/10085572
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         7, Application US/10087195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 KNYEAWFWEMNNADTYYQHTFEKATFDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 NQPDWADEAANGAHQDAWKSLKADVENYYYMYKATYKNDPVWGNDFTCVGVMANDVNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        h 66.2%; Score 630; DB 14;
Similarity 66.5%; Pred. No. 1.4e-61;
13; Conservative 20; Mismatches 37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD 120
                                                                                                                                                                                                                                                                                                                                                                                                                          US20020151499A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US20020193306A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2488-1-004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1999-09-01
  28.1%;
Score 267.5;
  DB
  14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
Length 182;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
```

```
Minimum
Maximum
                                                                                                                                                                                                                                                                                                 Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                 ŏ
                                                                                                                                                                                                                                                                                                                                                               Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB
                630
267.5
267.5
79.5
79.5
79.5
79.5
79.5
79.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           seq length: 0 seq length: 2000000000
                              100.0
100.0
66.2
66.2
28.1
28.1
28.1
8.4
8.4
8.4
8.4
8.4
8.4
8.4
8.4
8.4
                                                                                                                                                                                                                                                                             Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             451899 seqs, 118759770 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-087-195-6
952
                                                                                                                                                                                                                                                                                                                                                                                                                                         August 1, 2003, 12:15:58; Search time 17.0362 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                // Cgn2_6/ptodata/1/pubpaa/US07_PUBCOMB.pep: *
// Cgn2_6/ptodata/1/pubpaa/PCT_NEW_PUB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US07_NEW_PUB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US08_NEW_PUB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US09_PUBCOMB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US09_PUBCOMB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US09_NEW_PUB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US10A_PUBCOMB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep: *
// Cgn2_6/ptodata/1/pubpaa/US10A_PUBCOMB.pep: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Published_Applications_AA: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DKPVWADEAANGEHQDAWKH.....NEYAAGLPVRDVYTSDCLPE 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                      /cgn2_6/ptodata/1/pubpaa/US60_PUBCOMB.pep:*
                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                 В
114
115
115
115
115
115
115
                           US-10-085-572-8

US-10-087-195-8

US-10-012-542-250

US-10-012-542-518

US-10-068-134-1

US-10-012-542-219

US-10-103-196-17

US-10-103-196-17

US-10-103-196-17

US-10-103-196-17
                                                                                                                                                                                                                                                                               H
                                                                                                                                                                                      US-10-085-572-6
US-10-087-195-6
US-10-085-572-7
US-10-087-195-7
US-09-989-545-14
                                                                                                                                                                                                                                                                                                                                    SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (without alignments)
1199.017 Million cell updates/sec
                                                                                                                                                                                                                                                                             Description
            Sequence
Sequence
                                               Sequence
Sequence
                                                                                 Sequence
Sequence
                                                                                                                                                                                                         Sequence
Sequence
                                                                                                                  Sequence
                                                                                                                                    Sequence
                                                                                                                                                      Sequence
                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                           Sequence
            6, Appli
7, Appli
7, Appli
7, Appli
8, Appli
8, Appli
250, App
1, App
1, Appli
219, Appli
219, Appli
6, Appli
6, Appli
6, Appli
13509, A
```

;	Д., Л.	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
								75.5															75.5						76	76
;	7 9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9			٠		8.0	
ć	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	468	1011	221
ţ	ر ا د	5	<u>1</u> 5	15	15	14	12	11	11	H	11	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	10	9	15	9
+ C C C C C C C C C C C C C C C C C C C	-10-016-177a-3	-10-013-929A-3	-013-921A	-749-33	US-10-017-081A-337		8-375A-	US-09-978-643A-337	-187B-	US-09-978-757A-337	-09-999-830A-	-978-193A-	-978-423A-	US-09-918-585A-337	-09-978-824-3	-09-981-915A-	-09-999-833A-	-09-978-564A-	-09-978-403A-	US-09-978-191A-337	US-09-978-585A-337	-09-978-608	-09-978-189-33	99-832A-	-978	8-697-3	US-09-978-295A-337	26	US-10-128-714-8129	US-09-728-914-4
deli i i co companione	7,7	317	337,	337,	337	51,	337	Sequence 337, App	337	337	337,	337,	337,		337,	337,	337,		337,	337,	e 337,	æ	337,	e 337,	337,	337,	e 337	il, Apı	O	Sequence 4, Appli

ALIGNMENTS

```
밁
                                                                                                                                                                                                                                                                                                                                     ; LENGTH: 172
; TYPE: PRT
; ORGANISM: FS-HBP1
US-10-085-572-6
                              δÃ
                                                                              밁
                                                                                                              ·Ω
                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-085-572-6
                                                                                                                                                                                                                                                   Query Match
Best Local S
Matches 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 6, Application US/10085572
Publication No. US20020151499A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                        SEQ ID NO 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION NUMBER: US/10/085,572
CURRENT FILING DATE: 2002-02-27
PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR FILING DATE: 2000-08-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Nuttall, Patricia, Ann
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INTENTION: Treatment of Conjunctivitis
FILE REFERENCE: 2488-1-003
                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQ ID NOS: 8
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER: 9920674.0 PRIOR FILING DATE: 1999-09-01
121 VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCLPE 172
                                                                              1 DKPYWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE 60
                                                                                                                                                                                                                                                                         Similarity
                       VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCLPE 172
                                                                                                                                                                  DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                                                                                                                                                                                                                 100.0%; Score 952; DB 14; ilarity 100.0%; Pred. No. 4.4e-97; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                            Length 172;
                                                                                                                                                                                                                                                     0,
```

60

```
Ş
                                                                                                    ₽
                                                                                                                                                                   ð
                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S K D D D D D D D C C C C C C C C C C C T T T P X C P N X C D D T T T T P X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C P N X C 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; 226877; CAA81489.1; -.

EMBL; 228165; CAA82007.1; -.

PIR; S37786; S37786.

SGC; SG001648; MCD4.

GO; GO:0009277; C:cell wall (sensu Fungi); IDA.

GO; GO:0009274; C:vacuole (sensu Fungi); IDA.

GO; GO:0006506; P:GPI anchor blosynthesis; IDA.

InterPro: IPR007070; PigN.

Pfam; PF04987; PigN: 1.

Hypothetical protein.

SEQUENCE 919 AA; 105693 MW; B8F1D0BF80792C6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-JUN-1994 (Rel. 29, Created)
01-JUN-1994 (Rel. 29, Last sequence update)
01-OCT-1994 (Rel. 30, Last annotation update)
Hypothetical 105.7 kDa protein in TPK3-PIRI intergenic
YKL165C OR YKL619.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Saccharomyces cerevisiae (Baker's yeast).
Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetales; Saccharomycetaceae; Saccharomyces
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-94378720; PubMed-8091859;
Vandenbol M., Bolle P.-A., Dion C., Portetelle D., Hil
PDNA sequencing of a 36.2 kb fragment located between
LAP loci of chromosome XI of Saccharomyces cerevisiae.
Yeast 10:S35-S40(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           YKQ5_YEAST
P36051;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                s SWISS-PROT entry is copyright. It is produced through a collaboration ween the Swiss Institute of Bioinformatics and the EMBL outstation European Bioinformatics Institute. There are no restrictions on it
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                           128
                                                                                                                       169
                                                                                                                                                                                                                                           117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20
                                                                                                                                                                                                                                                                                                   27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           w
                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAMEMEMNINADTIVIQHTEEKATPDKMYGYIKKENAITYQTED--GQVLTDVLAFSD-DNC 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   YVIYALGPDGSGAG-YELWAT-DYTDVPASCLEKFNEYAA---GLPVRDVYT-SDCLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PTWANEAKLGSYQDAWKSLQQDQNKRYKLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN
DTAGHSYRPYSAEYYDNVKYIDDQIPI-LIDKVNKFFADDKTAFIFTAD
                                                        DGSGAGYELWATDYTD------VPASCLEKFNEYAAGLPVRDVYTSD
                                                                                                                                                                            TVYQHTFEKATPDKMYGYNKENAITYQTED----
                                                                                                                                                                                                                                     EDVSAVTKGWKSNPVNFDSFFNQSTHTYSFGSPDILPMFKDGASDPNKVDTW------
                                                                                                                                                                                                                                                                                                   ENYDLIKATYKNDPVWGNDFTCVGTAAQNLN-----EDEKNVEAWFMFMNNAD
                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                     9.3%;
                                                                                                                                                                                                                                                                                                                                                         30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20;
                                                                                                                    -ELDAFVFRHLDQLFHNSTLNSTLDYEIRQDGNVFFLHLLGC
                                                                                                                                                                                                                                                                                                                                                                                     Score 88.5;
Pred. No. 4.
                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B8F1D0BF80792C6A CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ₹
                                                                                                                                                                                                                                                                                                                                                                                                                    DB 1; Length 919;
                                                                                                                                                                            -GOVLTDVLAF - - - SDDNCYVIYALGP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       cerevisiae.";
                                                                                                                                                                                                                                                                                                                                                            64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Saccharomycetes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FAS1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11;
                                                                                                                                                                                                                                                                                                                                                               41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         77
                                                                                                                                                                                                                                        168
                                                                                                                                                                                                                                                                                                74
```

```
RESULT 5
XDHD_BACS
RA Borriss R., Bourster L., Brans A., Brignell S.C., Brignell S.C., Brignell S.C., Caldwell B., Capuano V., Carter N.M.,
RA Borriss R., Bourster L., Brans A., Edunings N.J., Daniel R.A.,
RA Choi S.K., Codani J.J., Connerton I.F., Cummings N.J., Daniel R.A.,
RA Choi S.K., Codani J.J., Connerton I.F., Cummings N.J., Daniel R.A.,
RA Chile S.D., Errington J., Fabret C., Ferrari E., Foulger D.,
RA Entian K.D., Errington J., Fabret C., Ferrari E., Foulger D.,
RA Fritz C., Fujita M., Fujita Y., Fuma S., Galizzi A., Galleron N.,
RA Ghim S.V., Glaser P., Goffeau A., Golightly E.J., Grandi G.,
RA Hilbert H., Holsappel S., Haga K., Haiech J., Harwood C.R., Henaut A.,
RA Hilbert H., Holsappel S., Hosono S., Hullo M.F., Itaya M., Jones L.,
AOris B., Karamata D., Kasahara Y., Klaerr-Blanchard M., Klein C.,
RA Kurita K., Lapidus A., Lardinois S., Lauber J., Lazarevic V.,
RA Kurita K., Lapidus A., Lardinois S., Lauber J., Lazarevic V.,
RA Kurita K., Lapidus A., Liu H., Masuda S., Mauel C., Medigue C.,
RA Moone D., O'Reilly M., Ogawa K., Ogiwara A., Oudega B., Park S.H.,
RA Noone D., O'Reilly M., Ogawa K., Ogiwara A., Oudega B., Park S.H.,
RA Parrov V., Pohl T.M., Portetelle D., Ropoport G., Rey M., Reynolds S.,
RA Rieger M., Ravolta C., Rocha E., Roche B., Rose M., Sadale Y.,
RA Sekiguchi J., Sekowska A., Seror S.J., Serror P., Shin B.S., Soldo B.,
Sorokin A., Tacconi E., Takagi T., Takahashi H., Takemaru K.,
RA Takeuchi M., Tamakoshi A., Tanaka T., Terpstra P., Tognoni A.,
RA Vintra P., Wijat A., Yamamoto H., Vamane K., Vasumoto K., Yata K.,
RA Vintra P., Wijat A., Yamanoto H., Vannier F., Vasumoto K., Yata K.,
Rh Yoshida K., Yoshikawa H.F., Zumstein E., Yoshikawa H., Danchin A.;
RT Tehroits P., Wijat A., Yamanoto of the Gram-positive bacterium Bacillus
                                                                                                                                                                                                                                            MEDLINE-21242727; PubMed-11344136; Schultz A.C., Nygaard P., Saxild H.H.; Schultz A.C., Nygaard P., Saxild H.H.; Schultz A.C., Nygaard P., Saxild H.H.; "Functional analysis of 14 genes that constitute the purine catabolic pathway in Bacillus subtilis and evidence for a novel regulon controlled by the Puck transcription activator."; J. Bacteriol. 183:3293-3302(2001).

J. Bacteriol. 183:3293-3302(2001).

J. Bacteriol. 183:3293-3302(2001).

C. CATALYTIC ACTIVITY: Xanthine and xanthine to uric acid.

COPACTOR: Molybdopterin (By similarity).
                                       This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                subunit D).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        28-FEB-2003 (Rel.
28-FEB-2003 (Rel.
28-FEB-2003 (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         XDHD_BACSU
032144;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BACSU
                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN-168;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Azevedo V.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kunst
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE-98044033;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Bacillus subtilis.
Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Probable xanthine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=1423;
                                                                              SIMILARITY: BELONGS TO THE XANTHINE DEHYDROGENASE FAMILY.
                                                                                                plus ammonia) and is induced during limiting-nitrogen (glutamate). Expression decreases when allantoin is aclimiting-nitrogen conditions.
                                                                                                                                              pucE.
INDUCTION: Expression is very low in excess nitrogen (glutamate limiting-nitrogen condition)
                                                                                                                                                                                                                             PATHWAY: Purine catabolism.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                complete
ilis.";
               SWISS-PROT entry is copyright. It is produced through a collaboration sen the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NE-98044033; PubMed-9384377;
F., Ogasawara N., Moszer I., Albertini A.M., Alloni
do V., Bertero M.G., Bessieres P., Bolotin A., Borch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     390:249-256(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  41, Created)
41, Last sequence update)
41, Last annotation update)
dehydrogenase subunit D (EC
                                                                                                                                                                                                           þe
                                                                                                                                                                                                       composed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacillales;
                                                                                                                                                                                                         of four subunits:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Bacillaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             745
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1.1.1.204) (XDHase
                                                                                                                                                                                                       pucA, pucC, pucD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               H., Danchin A.;
bacterium Bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Borchert
                                                                                                                          added
                                                                                                                                            conditions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В.,
```

between

European

Swiss Institute Bioinformatics

Institute.

are no

ne EMBL outstation restrictions on 1

```
뮍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SON DER DER COCO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query
Best I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q05884;
01-FEB-1995
01-FEB-1995
                                                                         the
                                                                                                                                 MEDLINE-93250042; PubMed-8485150;
TSao L.-S., Lin L.-L., Chen J.-C., Chen J.-H., Hsu W.-H.;
Blochim. Blophys. Acta 1173:119-119(1993).
-!- CATALYTIC ACTIVITY: Endohydrolysis of 1,4-alpha-glucosidic linkages in oligosaccharides and polysaccharides.
-!- SUBCELLULAR LOCATION: Secreted.
-!- SUMILARITY: BELONGS TO FAMILY 13 OF GLYCOSYL HYDROLASES, AI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pfam; PF02738; Ald_Xan_dh_C.
Pfam; PF02738; Ald_Xan_dh_C2; 1.
Pfam; PF01315; Ald_Xan_dh_C; 1.
Oxidoreductase; NAD; Molybdenum; P
SEQUENCE 745 AA; 80433 MW ...
 EMBL;
                       use by non-profit institutions as long as modified and this statement is not removed. U entitles requires a license agreement (See htt or send an email to license@isb-sib.ch).
                                                                                                   This
                                                                                                                                                                                                                                                               MEDLINE=93144336; PubMed-8424949;
Tsao L.-S., Lin L.-L., Chen J.-C., Chen J.-H., Hsu
"Cloning and characterization of an alpha-amylase
Streptomyces lividans.";
                                                                                                                                                                                                                                                                                                                                                                                                            205889;
01-FEB-1995 (Rel. 31, Created)
01-FEB-1995 (Rel. 31, Last sequence update)
01-FEB-1995 (Rel. 31, Last annotation update)
01-FEB-1995 (Rel. 31, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  entities
or send a
                                                                                        between
                                                                                                                                                                                                                                                                                                                                                   Bacteria; Actinobacteria; Actinobacteridae; Actinomycetales; Streptomycineae; Streptomycetaceae; Streptomyces. NCBI_TaxID=1916;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           use by
modified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SubtiList; BG13989; pucD
InterPro; IPR000674; Ald
                                                                                                                                                                                                                             ERRATUM
                                                                                                                                                                                                                                                   Biochim. Biophys. Acta 1171:255-262(1993).
                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.,
                                                                                                                                                                                                                                                                                                                                                                                          Streptomyces
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   φ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Match
                                                                      ween the Swiss Institute of Bioinformatics Institute.
                                                                                                                           KNOWN AS THE ALPHA-AMYLASE FAMILY.
                                                         SWISS-PROT entry is copyright. It is produced through een the Swiss Institute of Bioinformatics and the Ew European Bioinformatics Institute. There are no restr by non-profit institutions as long as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               B70017;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      165
  x70255;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Z99120; CAB15238.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       32
;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                d and this statement is not remove s requires a license agreement (S an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCYVIYALGPDGSGAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMFMNN------A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              non-profit instituted and this statement requires a license
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Υĸ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             YΕ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EEIAEAALELIQVEYKELEVMDSPEKALRPNAQRLHEDGNILHRAF-FSNGDVEEGFQAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DTVFEETYE--LPRQMHTY-----METEGGVAVPE-----DDGGFTMYA----GTQHG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                         lividans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               B70017.
CAA49759.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STANDARD;
                                                                                                                                                                                                                                                                                                                            AND SEQUENCE OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       institutions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 85.5; D
Pred. No. 5.9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    n; Purine metabolism; C4A3EC5F0094EF8D CRC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       as
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           removed.
                                                                                                                                                                                                                                                                                                                             34-43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (See
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              H
                                    http://www.isb-sib
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SE
                                               Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    its content
                                                                                                                                                                                                                                                                                      Hsu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length
                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                     W. -H.;
                                               уd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        by
                                                                       restrictions
                                                 and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          and
                                                                                     EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  is
i for
                                                                                                 ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     27;
                                                                                     collaboration -
                                                                                                                                      ALSO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                proteome
                                   ch/announce/
                                                            ut
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        in no way
r commercial
                                               n no way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6
```

```
A LO CONTRACTO DE LA CONTRACTORIA DEL CONTRACTOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HTRE_ECOLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                    SEQUENCE FROM N.A.
STRAIN-K12 / MG1655;
MEDLINE-974.26617; PubMed-9278503;
Blattner F.R., Plunkett G. III, Bloch C.A.
Riley M., Collado-Vides J., Glasner J.D.,
Gregor J., Davis N.W., Kirkpatrick H.A.,
Mau B., Shao Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-OCT-1993
01-NOV-1997
16-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CHAIN
ACT_SITE
ACT_SITE
ACT_SITE
    Science
                  "The
                                                                                                                                                                                                                                                                                                                                                   Raina S., Missiakas D., Baird L., Kumar S., Georgopoulos "Identification and transcriptional analysis of the Esche htrE operon which is homologous to pap and related pilin J. Bacteriol. 175:5009-5021(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HSSP; P105
InterPro;
                                                                                                                                                                                                Nucleic Acids Res.
                                                                                                                                                                                                                                                      Fujita N., Mori H., Yura T.,
                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE-93352405; PubMed-8102362; Raina S., Missiakas D., Baird L., Kumar S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Outer membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pfam; PF00128; alpha-amylase; 1. pfam; PF02806; alpha-amylase_C; 1. pfam; PF03714; PUD; 2. SMART; SM00642; Aamy; 1.
                                                                                                                                                                                              Fujita N., Mori H., Yura T., Ishihama A.;
"Systematic sequencing of the Escherichia coli genome: analysis
the 2.4-4.1 min (110,917-193.643 bp) region.";
Nucleic Acids Res. 22:1637-1639(1994).
                                                                                                                                                                                                                                                                          STRAIN-K12 / W3110;
MEDLINE-94261430; P
                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN-K1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bacteria; Proteobacteria;
Enterobacteriaceae; Esche
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HTRE OR B0139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       P33129;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HTRE_ECOLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hydrolase;
SIGNAL
                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=562;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local
complete genome sequence nce 277:1453-1474(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               P10529;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                 FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GQPFDD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; IPR006048; Alph
; IPR006047; Alph
; IPR005323; PUD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GQVLTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 --NKDLKNLISKAHAKGMKVFF----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NLNEDEKN---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KLVEENYDLIKA------TYKNDPV------WGNDFTCV---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KGLTEKLDYIKGLGTTSIWMAPIFKNQPVQGTGKDASAGYHGYWITDFTQVDPHFGT---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IPR006589;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      919
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Glycosidase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          312
316
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            usher protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27,
35,
40,
                                                                                                                                                                                                                                                                          PubMed=8202364;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        919
312
316
417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100642 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alpha_amyl_cat_sub.
Alpha_amyl_c.
Alpha_amyl_cat.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Last sequence update)
Last annotation updat
protein htrE precursor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Carbohydrate metabolism;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -VEAWEMEMNNADTVYQHTFEKAT-PDKMYGYNKENAITYQTED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ALPHA-AMYLASE.
BY SIMILARITY.
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 81.5;
Pred. No. 1
                      of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ВΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      035B59FB80F0BD10
                      Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          precursor
                                                                          .D., R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         865
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -DVITNHTADVVDYEEKSYDYLSKGAFPYLTKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               17;
                                                          Goeden
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A
                                                                          Rode C.K., Mayhew
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (Heat shock
                      coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Enterobacteriales;
                                                                                             N.T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Signal.
                    K-12.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                        pilin operons.";
                                                                                                                                                                                                                                                                                                                                                                                              Escherichia coli
                                                          Rose
                                                                          Burland V yhew G.F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               919;
                                                                                                                                                                                                                                                                                                                                                                                                                ဂ
                                                          Ö.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         49;
                                                                                               ۷,
                                                                                                                                                                                                                                      of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            E)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -GTAAO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            157
```

```
RESULT
ENVF_SI
AC QI
DT QI
DT 28
DT 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                            ₽
                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                           ş
                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                            056032;
01-NOV-1997 (Rel. 35, C
28-FEB-2003 (Rel. 41, I
28-FEB-2003 (Rel. 41, I
Probable lipoprotein er
ENVF OR STM1240.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DISULFID
CONFLICT
CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              [4]
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EMBL; L00680; AAA23721.1; ALT_SEQ EMBL; D26562; -; NOT_ANNOTATED_CD: EMBL; AE000123; AAC73250.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EcoGene; EG11972; htrE.
InterPro; IPR000015; Fimb_usher.
Pfam; PF00577; Usher; 1.
                 Salmonella
                                                                                                                                       ENVF_
                                                                                                                                                        SALTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Outer membrane; Transmembrane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  INDUCTION: BY heat shock.

SIMILARITY: BELONGS TO THE FIMBRIAL EXPORT USHER FAMILY.

SIMILARITY: REF 2 SEQUENCE DIFFERS FROM THAT SHOWN DUE TO A

FRAMESHIFT IN POSITION 481 WHICH CREATES TWO SEPARATE ORFS.

CAUTION: REF 1 SEQUENCE WAS INCORRECT IN POSITION 861 ONWARD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TO CLONING ARTIFACT.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SUBCELLULAR LOCATION: Integral
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OF A PILIN-TYPE PROTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (By similarity)
                                                                                                                                       SALTY
                                                                                                                                                                                                                                                                                                                                                                573
                                                                                                                                                                                                                                                                                                                                                                                                                                  530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             D26562; -; NOT_ANNOTATED_CDS
AE000123; AAC73250.1; -.
                                                                                                                                                                                                                                                                                                                              79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           proteome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                OF 30-33.
                                                                                                                                                                                                                          SFSDSDTLAVVQAPGAQGARINYGNSTIDRWGYGVT---
                                                                                                                                                                                                                                                                                                                                                                SVYLSFTIPIEKLLGTEQRTSGFQSIDTQISSDFKGNNQLNVSSSGYSDNARVSYSVNTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                WADEAANGEHODAWKHLOKLVEENYDLIKATYKNDPVWGNDFTCVGTAAONLNEDEKNVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PS01151; FIMBRIAL_USHER;
                                                                                                                                                                                                                                                                                          YTMNKASKDLSYVGGYASYESPWGTLAGSISANSDNSRQVSLSTDGGFVLHSGGLTFSND
                                                                                                                                                                                                                                                                                                                              HTFEKATPDKMY-
                                                                                                                                                                                                                                                                                                                                                                                                                                WSDYWASGQNR-----SNYSI---GYSNSTSWGSYSV---SAQRSWNEDGDTDD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     30
838
51
810
849
,865
                typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PROBABLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ₹
                                                                                                                                       STANDARD;
                                                                                                                                                                                                                                                          -CYVIYALGPDGSGAGY-----ELWATDYTDVPASCLEKFNEYAAGLPVRDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        29
865
862
51
811
849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      95499
                                                   envF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              to the
                                                Last sequence up 
Last annotation 
envF precursor.
                                                                                                    Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        o the SWISS-PROT data bank
PORIN-LIKE PROTEIN NECESSI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ¥
Gammaproteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OUTER MEMBRANE USHER F
POTENTIAL.
S -> T (IN REF. 1).
QC -> HR (IN REF. 1).
E -> P (IN REF. 1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 80.5;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Fimbria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      F1748B551E4A5AAE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        membrane protein.
                                                                                                                                      262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Transport;
                                                                                                                                                                                                                                                                                                              -NKENA--ITYQTEDGQVL-TDVLAFSDD
                                                                                                                                      B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NECESSARY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          . 1).
1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                          -SALSPYHENRIALDINDL
                                                                                                                                                                                                                                                                                                                                                                                                ---- FMNNADTVYQ----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PROTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Signal; Heat shock;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FOR THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Outer membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      865;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    99;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ASSEMBLY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DUE
                                                                                                                                                                                                                                                                                                                          117
                                                                                                                                                                                                                                                                                                                                                                632
                                                                                                                                                                                                                                                                                                                                                                                              78
                                                                                                                                                                                                                                                                                                                                                                                                                                572
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                             20
                                                                                                                                                                                                                                          RESULT 9
                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
```

```
Query Match
                                                                                                                                                                                                                   SIGNAL
CHAIN
LIPID
CONFLICT
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                 StyGene; PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the Entre the European Bioinformatics Institute. There are no restructe by non-profit institutions as long as its content use by non-profit institutions as long as its content modified and this statement is not removed. Usage by and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAIN-LT2 / SGSC1412 / ATCC 700720;

MEDLLNE-21.534948; PubMed-11677609;

MCCLelland M., Sanderson K.E., Spleth J., Clifton S.W.,

McClelland M., Sonderson K.E., Dante M., Du F., Hou

Courtney L., Porwollik S., Ali J., Dante M., Du F., Hou

Leonard S., Nguyen C., Scott K., Holmes A., Grewal N.,

Ryan E., Sun H., Florea L., Miller W., Stoneking T., Ni

Waterston R., Wilson R.K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRAIN=ATCC 14028:
MEDLINE=95394809; PubMed=7665482;
Gunn J.S., Alpuche-Aranda C.M., Loon
"Characterization of the Salmonella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    region."
                                                                                                                                                                                                                                                                                                                                                                                      EMBL; AE008754; AAL20169.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                           or send an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                entities requires
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Nature 413:852-856(2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Enterobacteriaceae;
                                                                                                                                                                                                                                                                                                                                  Membrane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "Complete genome sequence
                                                                                                                                                                 Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteriol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (Probable).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SUBCELLULAR LOCATION: Attached to the membrane
                                                                        110
165
                                                                                                                                                                                                                                                                                                                                                                                                           U31849; AAA82997.1; -.
                                    86
                                                                                                         38
                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                 SG10627;
PS00013;
ASGIISVTEDSDIVVRAEIAHNGEFVYDITITAKNTARAVMTLNKDGSIAGYEI
                                PDKMYGYNKENAITYQTE---DGQVLTDVLAFSDDNCYVIYALGPDGSGAGYEL
                                                                                                         NDPVWGN----DFTCVGTAAQNLNEDEKNVEAWFMFMNNADTV-----YQHTFEKAT
                                                                                                                                                                                                                                                                                                                                  Lipoprotein;
                                                                                                                                                                                                                   223
245
262 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                           equires a license agreement (S email to license@isb-sib.ch).
                                                                                                                                             Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   177:5040-5047(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N.A.
                                                                                                                                                                                                                                                                                                                                                 PROKAR_LIPOPROTEIN;
                                                                                                                                                                                                                                                                                                                                                                      envF
                                                                                                                                                                                                                   25
262 P
262 P
263 D
223 D
262 Q
29572 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Salmonella
                                                                                                                                                               8.4%;
                                                                                                                                                                                                                                                                                                                                Signal;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of Salmonella enterica
                                                                                                                                             21;
                                                                                                                                                               Score 80;
Pred. No.
                                                                                                                                                                                                                   N-ACYL DIGLYCERIDE (POTENTIAL).
D -> A (IN REF. 1).
QRKRAAGKMUSTQOTFK -> PA (IN REF. 2BC6042085839143 CRC64;
                                                                                                                                                                                                                                                                                             PROBABLE LIPOPROTEIN ENVF
                                                                                                                                                                                                                                                                                                             Complete proteome POTENTIAL.
                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Loomis W.P., Belden W.J., ella typhimurium pagC/pagD
                                                                                                                                                                                                                                                                                                                                                                                                                                                               (See
                                                                                                                                                                   υ
                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Clifton S.W.,
                                                                                                                                                                                  ۲.
                                                                                                                                                                                                                                                                                                                                                                                                                                                             http://www.isb-sib.
                                                                                                                                             46;
                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  serovar
                                                                        DSINFSIIPERIQETIKRAN
                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            by a lipid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HOU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mulvaney E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Typhimurium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Miller S.I.;
chromosomal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a collaboration -
                                                                                                                                             20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              anchor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                .ch/announce/
                                                                                                                                             Gaps
                                                                        164
```

```
SULT 9

12_ANASP

ARIZ_ANASP

ARIZ_ANASP

ARIZ_ANASP

ARIZ_ANASP

ARIZ_ANASP

ARIZ_ANASP

ARIZ_ANASP

ARIZ_ANASP

ARIZ_ANASP

STANDARD;

PRT; 387 AA.

RAIZ_ANASP

ARIZ_ANASP

ARIZ_ANASP
```

```
Query Match
Best Local S
Matches 36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PIR; AD2335; AD2335.

PIR; AD2335; AD2335.

HAMAP; ME 01106; -; 1.

InterPro; IPR002813; ArgJ.

Pfam; PF01960; ArgJ; 1.

ProDom; PD004193; ArgJ; 1.

TIGREAMS; TIGR00120; ArgJ; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE-21595285; PubMed-11759840;
Kaneko T., Nakamura Y., Wolk C.P., Kuritz T., Sasamoto S., Watanabe A., Iriguchi M., Ishikawa A., Kawashima K., Kimura Kishida Y., Kohara M., Matsumoto M., Matsuno A., Muraki A., Nakazaki N., Shimpo S., Sugimoto M., Takazawa M., Yamada M., Yasuda M., Tabata S.;

"Complete genomic sequence of the filamentous nitrogen-fixing cyanobacterium nabacas."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        cyanobacterium Anabaena sp. strain PCC 7120.";
DNA Res. 8:205-213(2001)
-I- FUNCTION: Catalyzes two activities which are involved in to cyclic version of arginine biosynthesis: the synthesis of acetlyglutamate from glutamate and acetyl-CoA, and of ornitransacetylation between acetylornithine and glutamate (B)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Acyltransferase;
CHAIN 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TIGRFAMs; TIGRO0120; ArgJ; 1.
Arginine biosynthesis; Multifunctional enzyme; Transferase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bacteria; Cyanobacteria;
NCBI_TaxID=103690;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               glutamate
PATHWAY: Arginine biosynthesis; first
PATHWAY: Arginine biosynthesis; fifth
SUBUNIT: Heterotetramer of two alpha a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CATALYTIC ACTIVITY: N(2)-acetyl-L-ornithine + L-glutamate = ornithine + N-acetyl-L-glutamate.

CATALYTIC ACTIVITY: Acetyl-CoA + L-glutamate = CoA + N-acetyl-CoA + N-acetyl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              similarity).
SUBCELLULAR LOCATION: Cytoplasmic (Probable).
MISCELLANEOUS: Some bacteria possess a monofunctional capable of catalyzing only the fifth step of the argin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             biosynthetic pathway SIMILARITY: Belongs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           similarity)
360
                                                                                                                                                                                                                                                                            267
                                                                                                                                                                                                        63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AP003595; BAB75934.1;
                                                                                                                                                                                                                                                                                                                                             4
                                                                                                                                                                                                                                                                                                                                                                                                                    36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
LNIGTDVA----TVWGCDLTE
                                                                YALGPDGSGAGYELWATDYTD
                                                                                                                                                                                          VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCYVI
                                                                                                                                                                                                                                                                     TYDSAAN--YAQAKRVAKAIV--NSPLVKTAVYGADPNWGRVAMAIGKC---
                                                                                                                                                                                                                                                                                                            VWADEAANGEHQDAWKHLQKLVEENYDLIK-ATYKNDPVWGNDFTCVGTAAQNLNEDEKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     179
387 t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AD2335.
                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ₿
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Complete proteome.

179 ARGININE BIOSYNTHESIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     180
41145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             387
                                                                                                                                                                                                                                                                                                                                                                                                                                                 8.4%;
25.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 to the argJ family
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nostocales; Nostocaceae;
                                                                                                                                        ----DEVQVYPN---
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 80;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CLEAVAGE (NONHYDROLYTIC) (BY B4A340DC3FF3013D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIMILARITY).
ARGININE BIOSYNTHESIS BIFUNCTIONAL PROTEIN ARGJ2 BETA CHAIN (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PROTEIN ARGJ2 ALPHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    the filamentous nitrogen-fixing
train PCC 7120.";
376
                                                                                                                                                                                                                                                                                                                                                                                                         red. No. 8.2;
Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      alpha and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  step.
istep.
and two
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1;
                                                                                                                                                                                                                                                                                                                                                                                                                 50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  beta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nostoc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BIFUNCTIONAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     arginine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of ornithine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N-acetyl-L-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 argJ,
                                                                                                                                                                                                                                                                                                                                                                                                             32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (By
                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                         -EDERD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ŗ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               γď
                                                                                                                                                                                                                                                                                                                                             62
                                                                                                                                                                                                 122
                                                                                                                                                                                                                                                                         317
                                                                                                                                                                                                                                                                                                                                                                                                             8
```

SOLUTION OF THE STANDERS OF TH

Ωy

몽 δÃ

망 Ş 문

PS50862;

AA_TRNA_LIGASE_II;

```
RESULT 10
SYSC_YEAST
                            HSSP; P34945; ISER.

SGD; S0002430; SES1.
GO; GO:0005737; C:cytoplasm; IDA.
GO; GO:0004828; F:serine-tRNA ligase ac
InterPro; IPR002314; tRNA-synt_2b.
InterPro; IPR002317; tRNA-synt_ser.
InterPro; IPR00317; tRNA-synt_ser.
InterPro; IPR006195; tRNA_I; 1.
Pfam; PF02403; Seryl_tRNA_N; 1.
Pfam; PF02403; tRNA-synt_2b; 1.
                                                                                                                                      EMBL; X04884; CAA28572.1; $.
EMBL; Z47814; CAA87802.1; 1.
EMBL; X95966; CAA65216.1; -
EMBL; Z74319; CAA98844.1; -
EMBL; L15408; AA037412.1; -
PIR; S50930; YSBYC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         use by non-profit institutions as long modified and this statement is not removed. entitles requires a license agreement (See lor send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                      between the Swiss Institute of Bioinformatics and the the European Bioinformatics Institute. There are no reuse by non-profit institutions as long as its conten
                                                                                                                                                                                                                                                                                                                                                                               Folley L.S., Fox T.D.;
Submitted (XXX-1993) to the EMBL/GenBank/DDBJ databases
-!- CATALYTIC ACTIVITY: ATP + L-serine + trna(Ser) - AM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-APR-1988 (Rel. 07,
01-OCT-1996 (Rel. 34,
01-NOV-1997 (Rel. 35,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SYSC_YE
P07284;
                                                                                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
MEDLINE=97051598; PubMed-8896275;
Eide L.G., Sander C., Prydz H.;
"Sequencing and analysis of a 35.4 kb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRAIN=S288c / AB972;
Bowman S., Barrell B.
Submitted (JAN-1994)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Saccharomyces cerevisiae (Baker's yeast).
Eukaryota; Fungi; Ascomycota; Saccharomycotina; Saccharomycetales; Saccharomycetaceae; Saccharomyces
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ligase) (SerRS).
SES1 OR SERS OR YDR023W OR YD9813.
                                                                                                                                                                                                                                                                                                                                                             -!- SUBUNIT: Homodimer
                                                                                                                                                                                                                                                                                                                                                                                                                       STRAIN-S288c;
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Yeast 12:1085-1090(1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   chromosome IV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A. MEDLINE=87174725;
                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=4932;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Seryl-tRNA synthetase,
                                                                                                                                                                                                                                                                                                                                 SUBCELLULAR LOCATION: Cytoplasmic.
SIMILARITY: Belongs to class-II aminoacyl-tRNA synthetase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                _YEAST
                                                                                                                                                                                                                                                                                                                                                                       L-seryl-tRNA(Ser).
       PRO0981; TRNA
IS; TIGRO0414;
                                                                                                                                                                                                                                                                                                                                                                                                                                    451-462 FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STANDARD;
                      TRNASYNTHSER.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PubMed=3031581;
I., Johnson-Burke D., Soell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Saccharomyces
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  , Created)
, Last sequence upd:
, Last annotation upd:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Rajandream M.A.;
the EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                    N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .4 kb region cerevisiae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .
21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            update;
                                                                                                activity;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                462
                                                                                                                                                                                                                                                (See http://www.isb-sib
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   update)
5 6.1.1.11)
                                                                                                                                                                                                                                                                                   There are no restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A
                                                                                                                                                                                                                                                                       as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   reveal 23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0g
                                                                                                                                                                                                                                                           Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              the right arm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Saccharomycetes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (Serine--tRNA
                                                                                                                                                                                                                                                          γď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       r cytoplasmic
                                                                                                                                                                                                                                                                                                                                                                                     AMP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 open reading
                                                                                                                                                                                                                                                             and
                                                                                                                                                                                                                                                                                                                                                                                    diphosphate
                                                                                                                                                                                                                                                             for
                                                                                                                                                                                                                                                .ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of.
                                                                                                                                                                                                                                                                                                 outstation
                                                                                                                                                                                                                                                                                                                                   family.
                                                                                                                                                                                                                                                             n no way
                                                                                                                                                                                                                                                                                   on
                                                                                                                                                                                                                                                                                   its
```

```
THE REPORT OF TH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOFE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                        RA Strausberg R.L., Felingold E.A., Grouse L.H., Derge J.G.,
RA Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA Altechul S.F. Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA Altechul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA Courselein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
RA Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA Willalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R. A.,
RA Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA Butkesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M.,
RG Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.;
"Generation and initial analysis of more than 15,000 full-length
RT human and mouse cDNA sequences.',
Islau S. (2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 33
CHARACTERIZATION.
CHARACTERIZATION.
MEDLINE-20521747; PubMed-11067927;
Chiravuri M., Agarraberes F., Mathieu S.L., I
Chiravuri M., Agarraberes and characterization
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Homo sapiens (Human).
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              i6-OCT-2001 (Rel. 40, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
15-SEP-2003 (Rel. 42, Last annotation update)
Dipeptidyl-peptidase II precursor (EC 3.4.14.2) (DPP II) (Dipeptidyl aminopeptidase II) (Quiescent cell proline dipeptidase) (Dipeptidyl century)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Aminoacyl-tRNA synthetase; Protein biosynthesis; Ligase; CONFLICT 224 2.4 L -> P (IN REF. 1). SEQUENCE 462 AA; 53309 MW; BBED6EA47E6F547B CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-22388257;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          protease,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A., AND PARTIAL SE MEDLINE-20036542; PubMed-10567372;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               peptidase 7).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q9UHL4; Q969X4;
16-OCT-2001 (Re
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DPP2_HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Sequence, purification, and cloning of an in protease, quiescent cell proline dipeptidase. J. Biol. Chem. 274:34053-34058(1999).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Underwood R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Cardley Y., Huber B.T.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OR DPP7 OR QPP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  418
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EHQDAWKHLQKLV---EENYDLIKATYKNDPVWGNDFTCVGTAAQNLNE---DEKNVEAW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NYQTEDGLVVPEVL 431
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FPYQKEYKELVSCSNCTDYQSRNLEIRCGIKKMGDREKKYVHCLNSTLAATQRALCCILE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FMFM-----NNADTVYQHTFE-----KATPDKMYGY----NKENAIT------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EPEKSWEEFEKMISYSEEFYKSLKLPYR-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -YQTEDGQVLTDVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Chiravuri M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PubMed-12477932;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Lee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 80;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Schmitz
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 1;
10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             intracellular serine
se.";
                       n of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----IVGIVSGELNNAAAKKYDLEAW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           40;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 462
                       A H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Kabcenell
                          novel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATP-binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A.K.,
                                                     B.T.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99
```

RESULT TOR1_SC ID TC AC 01 DT 28 DT 28 DT 28

SCHPO

STANDARD;

2335

₿

TOR1_SCHPO 014356; 28-FEB-2003 28-FEB-2003 28-FEB-2003

(Rel. (Rel. (Rel.

41, 41,

Created) Last sequ Last anno

sequence up annotation

update)

```
20
                                            밁
                                                                  Ş
                                                                                          밁
                                                                                                              δ
                                                                                                                                                                                       Query Match
Best Local S
Matches 44
                                                                                                                                                                                      CARBOHYD
CONFLICT
SEQUENCE
                                                                                                                                                                                                                       CARBOHYD
CARBOHYD
CARBOHYD
                                                                                                                                                                                                                                                                      ACT_SITE
ACT_SITE
ACT_SITE
.CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           dipeptidase.";
J. Immunol. 165:5695-5702(2000).
                                                                                                                                                                                                                                                          CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN the European Bioinformatics Institute. There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -
                                                                                                                                                                                                                                                                                                                      CHAIN
                                                                                                                                                                                                                                                                                                                                              SIGNAL
                                                                                                                                                                                                                                                                                                                                                                              InterPro; IPR000073; A/b_hydrolase.
InterPro; IPR000379; Ser_estrs_site
Pfam; PF00561; abhydrolase; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                MEROPS; S28.002; -
Genew; HGNC:14892;
                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                modified and this statement is not removed. Usage by and for entities requires a license agreement (See http://www.isb-sib.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 post-proline-cleaving aminodipeptidase,
                                                                                                                                                                                                                                                                                                                                 PROPEP
                                                                                                                                                                                                                                                                                                                                                         Signal
                                                                                                                                                                                                                                                                                                                                                                 lydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   oligopeptides.

CATALYTIC ACTIVITY: Release of an N-terminal dipep XCC, preferentially when Xbb is Ala or Pro. Substroligopeptides, preferentially tripeptides.

SUBCULT: Homodimer (Probable).

SUBCELLULAR LOCATION: Lysosomal and intracellular SUBCELLULAR LOCATION: Lysosomal and intracellular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SIMILARITY: BELONGS TO PEPTIDASE FAMILY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PTM: N-glycosylated.
MISCELLANEOUS: HAS AN UNUSUALLY BROAD PH
TO CLEAVE SUBSTRATE MOLECULES AT ACIDIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FUNCTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          bу
324
                    121
                                              265
                                                                                           221
                                                                                                                                                                                                                                                                                                                                                                                                                                        AF154502; AAF12747.1;
BC011907; AAH11907.1;
BC016961; AAH16961.1;
                                                                                                                                                                                                                                                                                                                                                       l; Zymogen
                                                                   73
                                                                                                                  15
                                                                                                                                          44;
                                                                                                                                                   Similarity
           VIYAL----GPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVY
DIYRLYHSCADPTGCGTGPDARAWDY----QACTE-INLTFASNNVTDMF
                                                                                           REAFRQIKDLFLQGAYDTVR------W--EFGTC-----QPLS-DEKDLTQLFMFARN
                                                                                                                QDAWKHLQKL-VEENYDLIKATYKNDPVWGNDF-TCVGTAAQNLNEDEKNVEAWFMFMNN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         non-profit institutions as long
                                                                  ADTVYQHTFEKATPDKMYGYNKENAITYQTE----DGQVLTDVLAFS-----DDNCY
                                            AFTVLA-MMDYPYPTDFLGPLPANPVKVGCDRLLSEAQRITGLRALAGLVYNASGSEHCY
                                                                                                                                                                                                                                                                                                                                                                   Serine
                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Plays an important role
                                                                                                                                                                                       3
                                                                                                                                                                                                                                                                                                                                                                   protease;
                                                                                                                                                                                                                                                                                                                                                                                                                 DPP7
                                                                                                                                                                                                    21
492
162
418
443
315
315
326
326
315
                                                                                                                                                                                      54327
                                                                                                                                                     8.4%;
25.9%;
                                                                                                                                                                                       ¥.
                                                                                                                                          27;
                                                                                                                                                                                                                                                                                                                                                                                                                                         . . .
                                                                                                                                                                                               POTENTIAL.

DIPEPTIOYL-PEDTIDASE I
CHARGE RELAY SYSTEM (P
CHARGE RELAY SYSTEM (P
CHARGE RELAY SYSTEM (P
N-LINKED (GLCNAC...)
                                                                                                                                                                                                                                                                                                                                                                   Aminopeptidase;
                                                                                                                                                   Score
Pred.
                                                                                                                                                                                                                                                                                                                                           POTENTIAL.
                                                                                                                                                                                      -> T (IN REF. 1)
5BC4BD0BE87F10C4
                                                                                                                                        ed. No. 12;
Mismatches
                                                                                                                                                     79.5; I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 quiescent cell proline
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               the
                                                                                                                                                                DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S28.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         H RANGE
PH AS W
                                                                                                                                                                                                                                                                                                                                                                   Lysosome;
                                                                                                                                        58;
                                                                                                                                                               ۲.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               degradation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AS WELL
                                                                                                                                                                                      CRC64;
                                                                                                                                                                                                                      ..) (POTENTIAL).
..) (POTENTIAL).
..) (POTENTIAL).
..) (POTENTIAL).
..) (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Substrates
                                                                                                                                                                                                                                                                                 (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           dipeptide, Xaa-Xbb-|-
                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                         (POTENTIAL).
                                                                                                                                                                                                                                                                                                                      Π
                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ĭ
                                                                                                                                                                                                             (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        L AS AT N
                                                                                                                                                                                                                                                                                                                                                                 Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          vesicles
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of
                                                                                                                                        41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              are
                      165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         T IS ABLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SI
                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9 9
                                                                                           264
                                                                                                                                        12;
```

```
RA Oliver K., O'Neil S., Pearson D., Oulil M.A., Rabbinowitsch E.,
RA Ritherford K., Rutter S., Saunders D., Seeger K., Sharp S.,
RA Ritherford K., Rutter S., Saunders D., Seeger K., Sharp S.,
RA Skelton J., Simmonds M., Squares R., Squares S., Stevens K.,
RA Faylor K., Taylor R.G., Tivey A., Walsh S.V., Warren T., Whithehead S.,
RA Woodward J., Volckaert G., Aert R., Robben J., Grymonprez B.,
RA Weltjens I., Vanstreels E., Rieger M., Schaefer M., Mueller Auer S.,
RA Weltjens I., Vanstreels E., Rieger M., Schaefer M., Mueller Auer S.,
RA Weltjens I., Vanstreels E., Rieger M., Schaefer M., Mueller Auer S.,
RA Weltjens I., Vanstreels E., Rieger M., Schaefer M., Mueller A.,
RA Weltjens I., Vanstreels E., Rieger M., Schaefer M., Mueller A.,
RA Weltjens I., Vanger I., Beck A., Lehrach H., Reinhardt R., Pohl T.M.,
RA Borzym K., Langer I., Beck A., Lehrach H., Reinhardt R., Pohl T.M.,
REGER P., Zimmermann W., Wedler H., Wambutt R., Purnelle B.,
ROffeau A., Cadieu E., Dreano S., Gloux S., Lelaure V., Mottier S.,
RA Galibert F., Aves S.J., Xiang Z., Hunt C., Moore K., Hurst S.M.,
Lucas M., Rochet M., Galilardin C., Tallada V.A., Garzon A., Thode G.,
RA Lucas M., Rochet M., Galilardin C., Tallada V.A., Garzon A., Thode G.,
RA Dominguez A., Revuelta J.L., Moreno S., Armstrong J., Forsburg S.L.,
RA Dominguez A., Revuelta J.L., Moreno S., Armstrong J., Forsburg S.L.,
RA Shpakovski G.V., Ussery D., Barrell B.G., Nurse P.;
"The genome sequence of Schizosaccharomyces pombe.";
Luxure 415:871-880(2002).
                                                                                                                         EMBL; 20.6; 140_
PIR; T40186; 140_
"SSP; P42345; 1FAP.
"SPBC"
                                                                                                                                                                                                                                                                                                                                                                                                        the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                This
                                                                                                                                                                                                                                                                                                                                               modified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Weisman R., Choder M.;
"The fission yeast TOR homolog, tor1+, is required for the response starvation and other stresses via a conserved serine.";
J. Biol. Chem. 276:7027-7032(2001).
                       InterPro;
                                                                                                                                        GeneDB_SPombe; SPBC30D10.10c;
                                                                                                                                                                                                                                                                                                                                                                                                                                      between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COllins M., Connor R., Cronin A., Davis P., Feltwell T., Fraser A., Gentles S., Goble A., Hamlin N., Harris D., Hidalgo J., Hodgson G., Holroyd S., Hornsby T., Howarth S., Huckle E.J., Hunt S., Jagels K., James K., Jones M., Leather S., McDonald S., McLean J., McDonald S., McLean J., McDonald S., McLean J., McDonald S., McLean J., McConey P., Moule S., Mungall K., Murphy L., Dablett D., Odell C., Collins R., McConey P., Moule S., Mungall K., Murphy L., Dablett D., Odell C., Collins R., McConey P., Moule S., Mungall K., Murphy L., Dablett D., Odell C., Collins R., McConey P., Moule S., Mungall K., Murphy L., Dablett D., Odell C., Collins R., McConey P., Moule S., Mungall K., Murphy L., Dablett D., Odell C., Collins R., McConey P., Moule S., Mungall K., Murphy L., Dablett D., Odell C., Collins R., McConey P., Moule S., Mungall K., Murphy L., Dablett D., Odell C., Collins R., McConey P., Moule S., McConey P., Moule S., McConey P., Moule S., McConey P., Moule S., Mungall K., Murphy L., Dablett D., Odell C., Collins R., McConey P., McConey P., Moule S., Mungall K., Murphy L., Dablett D., Odell C., Collins R., McConey P., Moule S., McConey P., Mc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Wood V., Gwilliam R., Rajandı
Sgouros J., Peat N., Hayles
Brooks K., Brown D., Brown S.
                                                                                                              InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE=21269225;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=21848401;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=4896;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Schizosaccharomyces.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Schizosaccharomycetales; Schizosaccharomycetaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Schizosaccharomyces pombe (Fission yeast).
Eukaryota; Fungi; Ascomycota; Schizosaccharomycetes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Phosphatidylinositol 3-kinase (PtdIns-3-kinase) (PI3K).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      [DENTIFICATION,
                                                                                                                                                                                                                                                                                    send
                                                                                                                                                                                                                                                                                                                                                                                               s SWISS-PROT entry is copyright. It is produced through a collaboration ween the Swiss Institute of Bioinformatics and the EMBL outstation European Bioinformatics Institute. There are no restrictions on i
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   starvation conditions.

CATALTIC ACTIVITY: ATP + 1-phosphatidy1-1D-myo-inosito1 = ADP 1-phosphatidy1-1D-myo-inosito1 3-phosphate.

INDUCTION: By nitrogen and/or carbon starvation, cold, osmotic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             oxidative stress.
SIMILARITY: BELONGS TO THE
SIMILARITY: Contains 16 HE/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FUNCTION: Phosphatidylinositoi 3-kinase homolog re progression and entry into stationary phase. Also onset of meiosis and sporulation under nitrogen ar starvation occasions.
                                                                                                                                                                , Z97992; CAL
, T40186.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ins-3-kinase) (PI3K).
OR SPBC30D10.10C.
                                                                                                                                                                                                                                                                                    an
                                                                             IPR003151;
IPR003152;
                                                                                                                                                                                                                                                                                                                  requires a
                                                                                                                                                                                                                                                                                                                                          non-profit institutions as long
and this statement is not removed
                       IPR000357;
IPR000403;
                                                                                                                                                                                                                                                                                 equires a license agreement (S email to license@isb-sib.ch).
                                                                                                                                                                                                                            CAB10805.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FUNCTION, AND INDUCTION, 5; PubMed=11096119;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PubMed=11859360;
                 ; FATC.
; HEAT_repeat.
; PI3_PI4_kinase.
                                                                                                                                                                                                                                                                                                                                                                       institutions as long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Rajandream M.A., Lyne M., Lyne R., S
Hayles J., Baker S., Basham D., Bowma
Brown S., Chillingworth T., Churcher
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        s 16 HEAT repeats.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  tor1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PI3/PI4-KINASES FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (E)
                                                                                                                                                                                                                                                                                                         (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2.7.1.137) (PI3-kinase)
                                                                                                                                                                                                                                                                                                                                                                    as its content
                                                                                                                                                                                                                                                                                                                                             Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       required
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bowman
                                                                                                                                                                                                                                                                                                                                                                                         restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               required
                                                                                                                                                                                                                                                                                                                                             and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    carbon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Stewart A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                     a collaboration
                                                                                                                                                                                                                                                                                                                                             for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               for
                                                                                                                                                                                                                                                                                                                                             commercia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          G
                                                                                                                                                                                                                                                                                                                                                                       по
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   anc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ç
                                                                                                                                                                                                                                                                                                                                                                    way
```

```
δÃ
                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                            닭
                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                   맑
                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local
                                                        SEQUENCE FF
STRAIN-972;
"Characterization of the geranylgeranyl transferase type I from Schizosaccharomyces pombe."; Mol. Microbiol. 29:1357-1367(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                         REPEAT
REPEAT
REPEAT
REPEAT
DOMAIN
SEQUENCE
                                                                                                                                 alpha) (FTase-alpha). CWP1 OR SPAPB1A10.04C
                                                                                                                                                 28-TEB-2003 (Rel. 41, Last sequence update)
28-TEB-2003 (Rel. 41, Last sequence update)
28-TEB-2003 (Rel. 41, Last annotation update)
Protein farnesyltransferase alpha subunit) (RAS proteins
farnesyltransferase alpha subunit) (RAS proteins
                                      Arellano M., Coll P.M., Yang W.,
                                                                                                             Schizosaccharomyces pombe (Fission Eukaryota; Fungi; Ascomycota; Schiz
                                                                                                                                          alpha)
                                                                                                                                                                                                                    SCHPO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REPEAT
REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REPEAT
REPEAT
REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REPEAT
REPEAT
REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PROSITE; PS50077;
PROSITE; PS00915;
PROSITE; PS00916;
                                              MEDLINE=98453135; PubMed=9781874;
                                                                                  NCBI_TaxID=4896
                                                                                                    Schizosaccharomycetales;
                                                                                                                                                                                                 060052;
                                                                                                                                                                                                        PFTA_SCHPO
                                                                                             Schizosaccharomyces.
                                                                                                                                                                                        28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Transferase;
REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PROSITE;
                                                                                                                                                                                                                                                                                            1506
                                                                                                                                                                                                                                                                                                                                                                   1402
                                                                                                                                                                                                                                                                                                                                 1455
                                                                                                                                                                                                                                                       1565 VSELEEFTSY 1574
                                                                                                                                                                                                                                                                          146
                                                                                                                                                                                                                                                                                                             108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PF02260; FATC; 1.
PF00454; PI3_PI4_kinase;
                                                                                                                                                                                                                                                                                                                                                 62
                                                                                                                                                                                                                                                                                                                                                                                     12
                                                                                                                                                                                                                                                                                                                                                                                                       43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SM00146; PI3Kc;
                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PS0091.,
PS50290; PI3_4_KINADE___.
PS50290; PI3_4_KINADE__.
Cell cycle;
                                                                 FROM N.A.,
                                                                                                                                                                                                                                                                                                                                                NVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKE-----NAITYQTEDGQ----V
                                                                                                                                                                                                                                                                                                                                                                   GOYNKAYGHIERHRDILVNDLSSIIGESYNR--AYG----IMVKSOMLSELEEIIDYKK 1454
                                                                                                                                                                                                                                                                                                                                                                                   GEHQDAWKHLQK----LVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE-----K
                                                                                                                                                                                                                                                                          ASCLEKENEY
                                                                                                                                                                                                                                                                                                             LTDVLAFSD----DNCYVIYALGPDGSGAGYE---
                                                                                                                                                                                                                                                                                                                               NMQ----YENNLDSL-----KKTWRKRLEGCQKNVDVWHNTLRFRALVLSPQDSPEMWIK
                                                                                                                                                                                                                                                                                            LADLCRRSDRLKLSNQCLTYLMGRDPSNA-YPLDSLKLLNPHVVYTYLKYLWATDQKNIA 1564
                                                                                                                                                                                                                                                                                                                                                                                                                                                            1005
1732
                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                         STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                           AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                   2335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PI3_4_KINASE_1;
PI3_4_KINASE_2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HEAT_REPEAT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            1003
1042
1769
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           512
560
560
596
679
722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      766
880
923
961
                                                                  FUNCTION,
                                                                                                                                                                                                                                                                          155
                                                                                                                                                                                                                                                                                                                                                                                                                8.4%;
                                                                                                                                                                                        Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                           266181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KINASE_3;
                                                                                                      Schizosaccharomycetaceae;
                                                                                                                                                                                                                                                                                                                                                                                                       29;
                                                                                                                                                                                                                                                                                                                                                                                                                                           ¥
                                                                                                                                                                                                                                                                                                                                                                                                                Score 79.5;
Pred. No. 78;
                                                                  AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HEAT.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HEAT
HEAT
HEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HEAT
HEAT
HEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HEAT
HEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HEAT
HEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                    PI3K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HEAT
                                                                                                              ssion yeast).
Schizosaccharomycetes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             HEAT
                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FALSE_NEG
                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                      Duran A., Tamanoi F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                  16.
/PI4K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Repeat
                                                                                                                                                                                                                                                                                                                                                                                                                                          5DCF1CF4ABE8E9A4 CRC64;
                                                                  SUBUNIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8.
9.
10
11
12
13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              7654321
                                                                                                                                                                                                          294
                                                                                                                                                                                                         Ą
                                                                                                                                                                                                                                                                                                                                                                                                                       DB
                                                                                                                                                                                                                                                                                                                                                                                                       55;
                                                                                                                                                                                                                                                                                                                                                                                                                      1.
                                                                                                                                                            2.5.1.-)
                                                                                                                                                   prenyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                       Length 2335;
                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                             (CAAX
                                      Perez
                                                                                                                                                                                                                                                                                                             -LWATDYTDVP 145
                                                                                                                                                                                                                                                                                                                                                                                                       63;
                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                               1505
                                                                                                                                                                                                                                                                                                                                                 107
                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                      11;
```

밁

207

LKDKILFAPDNQSAWNYLCGVLDKSGP 233

```
밁
                                                                         Ş
Ş
                                                                                                                        8
                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RA COllins M., Connor R., Jones D., Hallingworth T., Churcher C.M.,
RA Gentles S., Goble A., Hamlin N., Harris D., Hidalgo J., Hodgson G.,
RA Holroyd S., Hornsby T., Howarth S., Huckle E.J., Hunt S., Jagels K.,
James K., Jones L., Jones M., Leather S., McDonald S., McLean J.,
RA James K., Jones M., Leather S., McDonald S., McLean J.,
RA Mooney P., Moule S., Mungall K., Murphy L., Niblett D., Odell C.,
RA Mooney P., Moule S., Mungall K., Murphy L., Niblett D., Odell C.,
RA Mooney P., Moule S., Mungall K., Murphy L., Niblett D., Odell C.,
RA Moliver K., O'Nell S., Pearson D., Quall M.A., Rabbinowitsch E.,
RA Rutherford K., Rutter S., Saunders D., Seeger K., Sharp S.,
RA Weltjens J., Volckaert G., Rey R., Walsh S.V., Warren T., Whitehead S.,
RA Weltjens I., Vanstreels E., Rieger M., Schaefer M., Whitehead S.,
RA Gabel C., Fuchs M., Fritzc C., Holzer E., Moestl D., Hilbert H.,
RA Borzym K., Langer I., Beck A., Lehrach H., Reinhardt R., Pohl T.M.,
RA Goffeau A., Cadleu E., Dreano S., Gloux S., Lelaure V., Mottler S.,
RA Galibert F., Aves S.J., Xiang Z., Hunt C., Moore K., Hurst S.M.,
RA Lucas M., Rochet M., Gaillardin C., Tallada V.A., Garzon A., Thode G.,
RA Daga R.R., Cruzado L., Jimenez J., Sanchez M., del Rey F., Benito J.,
RA Cerrutti L., Lowe T., McComble W.R., Paulsen I., Potashkin J.,
RA Cerrutti L., Lowe T., McComble W.R., Paulsen I., Potashkin J.,
RA Shpakovski G.V., Usesery D., Barrell B.G., Nurse P.;
"The genome sequence of Schizosaccharomyces pombe.";
RT Nature 415:871-880(2002)
                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through a collab between the Swiss Institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL; AJ223304; CAA11246.1; -. EMBL; AL512562; CAC21477.1; -. HSSP; Q04631; 1FT1. GeneDB_SPombe; SPARBIAIO.04c;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Wood V., Gwilliam R., Rajandream M.A., Lyne M., Lyne R., Stewar
Sgouros J., Peat N., Hayles J., Baker S., Basham D., Bowman S.,
Brooks K., Brown D., Brown S., Chillingworth T., Churcher C.M.,
                                                                                                                                                                                                                                                                                             Transferase; Prenyltransferase; Repeat.
REPEAT 93 93 PFTA 2.
REPEAT 95 128 PFTA 2.
REPEAT 129 162 PFTA 3.
REPEAT 164 196 PFTA 5.
REPEAT 202 235 PFTA 5.
SEQUENCE 294 AA; 34876 MW; 84088977
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam; PF01239; PPTA; 5.
PROSITE; PS00904; PPTA; 3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN-972
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    InterPro; IPR002088; PPTA.
Pfam; PF01239; PPTA; 5.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE-21848401;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FUNCTION: Catalyzes the transfer of a farnesyl moiety farnesyl pyrophosphate to a cysteine at the fourth post the C-terminus of several proteins.
SUBUNIT: Heterodiner of an alpha and a beta subunit.
SUBLIARITY: BELONGS TO THE PROTEIN PRENYLTRANSFERASE I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIMILARITY: Contains 5 PFTA repeats.
                                          159
103
                                                                                4
                                                                                                                          99
                                                                                                                                                                5 WADEAANG--EHQDAWKHLQKLVE--ENYD-----LIKATYKNDPVWG------
                                                                                                                                                                                                                                   Similarity
EDGQVLTDVLAFSDDN-----
                                          NDYSQELKLTNELLEKDIYNNSAW----NHRFYVLFET----SKVVSWSLEEELNY--
                                                                                NDFTC - VGTAAQNLNEDEKNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQT
                                                                                                                          WLDETAEDFQKNYQVWHHRQKILSLTKNYERELEFTKKMFEIDSKNYHVWSYRVWILQNF
                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PubMed-11859360;
                                                                                                                                                                                                                            8.2%;
23.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         THE PROTEIN PRENYLTRANSFERASE ALPHA SUBUNIT
                                                                                                                                                                                                             21;
                                                                                                                                                                                                                                   Score 78;
Pred. No.
                                                                                                                                                                                                                                                                                                 840889770F11451E CRC64;
                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                   8.8;
                                                                                                                                                                                                                                                     DB 1;
                                                                                                                                                                                                             49;
                                                                                                                                                                                                                                                   Length 294;
                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     position
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Stewart A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         from
                                                                                                                                                                                                             46;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  outstation
                                                                                102
                                                                                                                          158
                                                                                                                                                                  43
```

```
PAC4_HUMAN STANDARD; PRT; 969 AA.
P29122; Q15099; Q15100; Q9UEG7; Q9UEJ1; Q9UEJ2; Q9UEJ7;
Q9UEJ9; Q9Y4G9; Q9Y4H0; Q9UEJ1; Q9UEJ2; Q9UEJ7;
Q1-DEC-1992 (Rel. 24, Created)
Q1-DEC-1992 (Rel. 24, Last sequence update)
15-SEP-2003 (Rel. 42, Last sequence update)
Paired basic amino acid cleaving enzyme 4 precursor (EC (Subtilisin/kexin-like protease PACE4) (Subtilisin-like
                                                                                                                                                                                              SEQUENCE FROM N.A. (ISOFORM TISSUE-Cerebellum; MEDLINE-97335942; PubMed-91 MOR1 K., Kii S., Tsuji A.,
                       Tsuji A., Hine C., Tamai Y., Yonemoto Bando M., Sakai E., Mori K., Akamatsu "Genomic organization and alternative kexin-like processing endoprotease."; J. Blochem. 122:438-452(1997).
                                                                                                      SEQUENCE FROM N.A. (ISOFORMS PACE4A-I; PACE4E-I AND PACE4E-II).
                                                                                                                                                                                                                                                                   "Identification of a Submitted (SEP-1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE-94235049; PubMed-8179631; Tsuji A., Higashine K., Hine C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Identification of a second human subtilisin-like the fes/fps region of chromosome 15."; DNA Cell Biol. 10:757-769(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Kiefer M.C., Tucker J.E., Joh
Barr P.J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TISSUE-Hepatoma, and Kidney; MEDLINE-92075167; PubMed-1741956;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                        MEDLINE-98021085; PubMed-9378725;
                                                                                                                                             containing a hydrophobic clust
J. Biochem. 121:941-948(1997).
                                                                                                                                                                                  Mori K., Kii S., Tsuji A., Nagahama M., Akamatsu T., Nagamune H., Matsuda Y.;
                                                                                                                                                                                                                                                                                               Mori K., Im
Matsuda Y.;
                                                                                                                                                                                                                                                                                                                         TISSUE-Placenta;
                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                 Biochem. Biophys.
                                                                                                                                                                                                                                                                                                                                                                              PACE4 isoforms.";
                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=95071480; PubMed=7980617; Tsuji A., Higashine K., Hine C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Biochem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PACE4 isoforms.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matsuda
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TISSUE-Placenta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Homo sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PACE4
ALTERNATIVE SPLICING (ISOFORM PACE4CS).
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ERRATUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Identification
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A. (ISOFORMS PACE4C AND PACE4D).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                        'A novel human
                                                                                                                                                                                                                                                                                                                                                                                            dentification
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Biophys.
                                                                                                                                                           PACE4 isoform, PACE4E ydrophobic cluster at t
                                                                                                                                                                                                                                                                                                                                                                                           of novel cDNAs encoding human kexin-like
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   of novel cDNAs
                                                                                                                                                                                                                                                                                                           Α.,
                                                                                                                                                                                                                  PubMed-9192737;
                                                                                                                                                                                                                                                                                                                                                                 Res. Commun.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Res. Commun.
                                                                                                                                                                                                                                          (ISOFORMS PACE4E-II AND PACE4E-II)
                                                                                                                                                                                                                                                                                                                                     (ISOFORM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (ISOFORMS PACE4A-I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Chordata;
Primates;
                                                                                                                                                                                                                                                                     novel PACE4 isoform, PACE4E.";
to the EMBL/GenBank/DDBJ datak
                                                                                                                                                                                                                                                                                                           Kii S., Nagamune H., Nagahama M.,
                                                                                                                                                                                                                                                                                                                                       PACE4A-II).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Craniata; Vertebrata; Catarrhini; Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           200:943-950(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 encoding human kexin-like
                                                                                                                                                                                                                                                                                                                                                                 204:1381-1382(1994)
                                                                                                                                                                                                                                                                                                                                                                                                                     Mori K., Tamai Y., Nagamune H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mori K., Tamai Y., Nagamune
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Landsberg K.E.,
                                                                                                                                                           E is
                                                 K., Mori K.,
T., Matsuda
splicing of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BNB
                                                                                                                    PACE4A-II;
                                                                                                                                                          an active carboxy te
                                                                                                                                                                                                   Imamaki A., Hayashi K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PACE4B)
                                                                                                                                                                                                                                                                      databases
                                                                             ~
                                                                                                                                                           /e processing protease
terminus.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q9UEJ7; Q9UEJ8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protease gene
                                                   human PACE4 (SPC4),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Saltman
                                                                                                                     PACE4CS;
                                                                              Yoshida
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3.4.21.-)
proprotein
                                                                                                                                                                                                                                                                                                                                                                                           protease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ξ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          'n
```

```
-I-FUNCTION: LIKELY TO REPRESENT AN ENDOPROTEASE ACTIVITY WITHIN THE CONSTITUTIVE SECRETORY PATHWAY, WITH UNIQUE RESTRICTED DISTRIBUTION IN BOTH NEUROENDOCKINE AND NON-NEUROENDOCKINE TISSUES AND CAPABLE OF CLEAVAGE AT THE RX(K/R)R CONSENSUS MOTIF.

-I-CATALYTIC ACTIVITY: Release of mature proteins from their proproteins by cleavage of Arg-Xaa-Yaa-Yaa-Arg-I-Zaa bonds, where Xaa can be any amino acid and Yaa is Arg or Lys.

-I-COFACTOR: PACE4A-I PROBABLY CALCIUM-DEPENDENT.
-I-SUBUNIT: THE PACE4A-I PRECURSOR ROTTEIN SEEMS TO EXIST IN THE RETICULUM ENDOPLASMIC AS BOTH A MONOMER AND A DIMER-SIZED COMPLEX WHEREAS MATURE PACE4A-I EXISTS ONLY AS A MONOMER, SUGGESTING THAT PROPEPTIOE CLEAVAGE AFFECTS ITS TERTIARY OR QUATERNARY STRUCTURE.
-I-SUBCELLULAR LOCATION: PACE4A-I AND PACE4-AII ARE SECRETED PACE4C AND PACE4CS ARE NOT SECRETED AND REMAIN PROBABLY IN ZYMOGEN FORM IN ENDOPLASMIC RETICULUM. PACE4E-I AND PACE4E-II ARE RETAINED INTRACELLULARLY PROBABLY THROUGH A HYDROPHOBIC CLUSTER IN THEIR C-TENNING DATEAL MITCH THEOLOGY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=99233559; PubMed=10
Sucic J.F., Moehring J.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Biosynthetic processing and quaternary interactions of proprotein convertase SPC4 (PACE4).":
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Tsuji A., Matsuda Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          can
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=97064242;
Zhong M., Benjann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Nagahama M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Endoprotease PACE4 is Ca2+-dependent and temperature-sensitive and can partly rescue the phenotype of a furin-deficient cell strain.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Moehring
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=98408849;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WEDLINE-97064242; PubMed-8906861;
Zhong M., Benjannet S., Lazure C., Munzer S., Seid
Tunctional analysis of human PACE4-A and PACE4-C
ldentification of a new PACE4-CS isoform.";
CEREBELLUM.

DOMAIN: THE PROPEPTIDE DOMAIN ACTS AS AN INTRAMOLECULAR CHAPERONE ASSISTING THE FOLDING OF THE ZYMOGEN WITHIN THE ENDOPLASMIC RETICULUM. ISOFORM PACE4D LACKS THE PROPEPTIDE DOMAIN.

SIMILARITY: Belongs to peptidase family S8.
                                                                                                                                                                                                               ISOId=P29122-8; Sequence-VSP_005436, VSP_005437; TISSUE SPECIFICITY: EACH PACE4 ISOFORM EXHIBITS A UNIQUE RESTRICTED DISTRIBUTION. PACE4A-I IS EXPRESSED IN HEART, BRAIN, PLACENTA, LUNG, SKELETAL MUSCLE, KIDNEY, PANCREAS, BUT AT COMPARATIVELY HIGHER LEVELS IN THE LIVER. PACE4A-II IS AT LEAST EXPRESSED IN PLACENTA, PACE4B WAS ONLY FOUND IN THE EMBRYONIC KIDNEY CELL LINE FROM WHICH IT WAS ISOLATED. PACE4C AND PACE4D EXPRESSED IN PLACENTA, PACE4B-II SEXPRESSED IN CEREBELLUM,
                                                                                                                                                                                      EXPRESSED IN PLACENTA. PACE4E-I IS PLACENTA AND PITUITARY. PACE4E-II
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ALTERNATIVE PRODUCTS: Event-Alternative splicing; Named isoforms-8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Name-PACE4E-II;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Name=PACE4E-I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Name=PACE4B;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Name=PACE4A-II;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Name=PACE4A-I; Synonyms=PACE4; ISOId=P29122-1; Sequence=Displayed;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TERMINUS. PACE4B MIGHT BE SECRETED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Lett. 434:155-159(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Lett. 396:31-36(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IsoId=P29122-5; Sequence=VSP_005430,
Note=Probably enzymatically inactive;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Note-Probably enzymatically
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Note-Probably enzymatically inactive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Note=Probably enzymatically inactive;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IsoId=P29122-2; Sequence=VSP_005436;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IsoId=P29122-7; Sequence=VSP_005437;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IsoId=P29122-6; Sequence=VSP_005427, VSP_005434, VSP_005435;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IsoId=P29122-4; Sequence=VSP_005432, VSP_005433;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 me=PACE4B; Synonyms=PACE4.1;
IsoId=P29122-3; Sequence=VSP_005428, VSP_005429;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       rescue the phenotype of . 339:639-647(1999).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Taniguchi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PubMed-9738469;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PubMed=10215603;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Hashimoto E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Inocencio N.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     inactive;
                                                                                                                                                                                          IS AT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Imamaki A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VSP_005431;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Luchini J.W
                                                                                                                                                                                          LEAST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Seidah
                                                                                                                                                                                          PRESENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N.G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ~
                                                                                                                                                                                                                                                         ARE
```

```
밁
              Q
                               밁
                                             ρy
                                                                                                Matches
                                                                        Query Matc
Best Local
                                                                                                                                                               EMBL;
                                                                                                                                                                                                                                                                             EMBL;
                                                                                                                                                                                                                                                                                                                                    EMBL;
                                                                                                                                                                                                                                                                                                                                                     EMBL;
                                                                                                                       EMBL;
                                                                                                                                       EMBL;
                                                                                                                                              EMBL;
                                                                                                                                                                               EMBL;
                                                                                                                                                                                     EMBL,
                                                                                                                                                                                                      EMBL;
                                                                                                                                                                                                              EMBL;
                                                                                                                                                                                                                             EMBL;
                                                                                                                                                                                                                                             EMBL
                                                                                                                                                                                                                                                             EMBL
                                                                                                                                                                                                                                                                      EMBL
                                                                                                                                                                                                                                                                                             EMBL
                                                                                                                                                                                                                                                                                                                    EMBL;
                                                                                                                                                                                                                                                                                                                              EMBL;
                                                                                                                                                                                                                                                                                                                                                                            EMBL;
                                                                                                                                                                                                                                                                                                                                                                                            EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 modified and this statement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through a collable between the Swiss Institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions
                                                                                                                                EMBL;
                                                                                                                                                        EMBL;
                                                                                                                                                                                               EMBL;
                                                                                                                                                                                                                      EMBL
                                                                                                                                                                                                                                      EMBL
                                                                                                                                                                                                                                                      EMBL
                                                                                                                                                                                                                                                                                                                                                                      EMBL;
                                                                                                                                                                                                                                                                                                                                                                                      EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                             EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                             EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -!- SIMILARITY: Contains 1 homo B/P domain.
                                                                                                                                                                                                                                                                                                                                                                                                                   M80482; AA
AB001294;
AB001898;
AB001900;
AB001900;
AB001902;
AB001902;
AB001903;
AB001904;
AB001904;
AB001904;
AB001904;
AB001914;
AB001914;
AB001914;
                                139
                                                                                                                                             AB001908
AB001914
AB001901
AB001901
AB001903
AB001905
AB001905
AB001907
AB001907
AB001914
AB001901
AB001901
AB001901
AB001901
AB001901
AB001901
AB001901
AB001901
AB001903
AB001908
AB001908
AB001908
                                                                                                                                                                                                                                                                                                                                                                    AB001900;
AB001901;
AB001902;
AB001903;
AB001904;
AB001905;
                                                                                                                                                                                                                                                                                                                                                    AB001906;
AB001907;
                69
                                                13
                                                                39;
                                                                        Similarity
GKNVVVTILDDGIERNHPDLAPNYDSYASYDVNGNDYDPSPRYDASNENKHGTRCAGEVA
               FMNNADTVYQHTFEKATPDKMYGYNK----ENAITY-----QTEDGQVLTDVLA 113
                                QQQEVKRRVKRQVRSD---PQALYFNDPIWSNMWYLHCGDKNSRCRSEMNVQAAWKRGYT
                                              EHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKNVE-AW---FM
                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAA59998
                                                                                                                               BAA21624.1;
                                                                                                                                                        BAA21624.1;
                                                                                                                                                                                                                                                                                      BAA21622
                                                                     .8.1%;
21.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          institutions as long as
                                                                                                      JOINED.
                                                                                                                      JOINED
JOINED
JOINED
                                                                                                                                                                    JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
                                                                                                                                                                                                                                                          JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
                                                                                                                                                                                                                                                                                                                                   JOINED.
                                                                                                                                                                                                                                                                                                                                                           JOINED
                                                                                                                                                                                                                                                                                                                                                                           JOINED
JOINED
JOINED
JOINED
JOINED
                                                                                                                                                                                                                                                                                                                                                                                                                                           JOINED.
                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOINED.
JOINED.
JOINED.
                                                                                                JOINED
                                                                                                                                                             JOINED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  is not removed
                                                                                                                                                                                                                                                                                                                                                     JOINED
                                                                                                                                                                                                                                                                                                                                                                                                                                   JOINED
                                                                      Score 77.5;
Pred. No. 41;
                                                               Mismatches
                                                                               DB
                                                              81;
                                                                              1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         its content
                                                                              Length
                                                               Indels
                                                              35;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          outstation
                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
255
                               195
                                               89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         way
```

á

용

B 6

```
P41413; Q62914; 01-NOV-1995 (Rel. 32, Created) 01-NOV-1995 (Rel. 40, Last sequence update) 15-SEP-2003 (Rel. 42, Last annotation update) Proprotein convertase subtilisin/kexin type 5 precursor (EC 3.4.2 (Proprotein convertase PC5) (Subtilisin/kexin-like protease PC5) (Convertase PC5) (PC6) (Fragments).
                                                                                                                                                       MEDLINE-97166043; PubMed-9013936;
Zheng M., Seldah N.G., Pintar J.E.;
Zheng M., Seldah N.G., Pintar J.E.;
The developmental expression in the rat CNS and peripheral tissues of processing enzymes.";
Dev. Biol. 181:268-283(1997).
Dev. Biol. 181:268-283(1997).
HITHIN THE CONSTITUTIVE AND REGULATED SECRETORY PATHWAY. CAPABLE OF CLEAVAGE AT THE RX(K/R)R CONSENSUS MOTIF. MAY BE RESPONSIBLE FOR THE MATURATION OF GASTROINTESTINAL PEPTIDES. MAY BE INVOLVED IN THE CELLULAR PROLIFERATION OF ADRENAL CORTEX VIA THE ACTIVATION OF GROWTH FACTORS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Lusson J., Vieau D., Hamelin J., Day R., Chretien M., Seida "CDNA structure of the mouse and rat subtilisin/Kexin-like candidate proprotein convertase expressed in endocrine and nonendocrine cells.";
                                                                                                                                                                                                                                                                                                                     xiang Y., Molloy S.S., Thomas L., Thomas G.;
"The PC6B cytoplasmic domain contains two acidic clusters that direct
sorting to distinct trans-Golgi network/endosomal compartments.";
Mol. Biol. Cell 11:1257-1273(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
NCBI_TaxID=10116;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PCK5_RAT
                                                                                                                                                                                                                                                                                                                                                                               SUBCELLULAR LOCATION
                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (JAN-1996) to
                                                                                                                                                                                                                                                                                                                                                                                                                 De Bie
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Rattus norvegicus
                                                                                                                                                                                                                                                                                                 DEVELOPMENTAL EXPRESSION
                                                                                                                                                                                                                                                                                                                                                                  MEDLINE-20214819;
                                                                                                                                                                                                                                                                                                                                                                                                                         FISSUE-Adrenal gland:
                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE OF 1676-1877 FROM N.A. (ISOFORM LONG).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WEDLINE-93342056;
                                                                           CATALYTIC ACTIVITY: Release of mature proteins from their proproteins by cleavage of Arg-Xaa-Yaa-Arg-1-Zaa bonds, where can be any amino acid and Yaa is Arg or Lys.
SUBCELLULAR LOCATION: PC5A IS SECRETED THROUGH THE REGULATED SECRETORY PATHWAY. PC5B IS A TYPE I MEMBRANE PROTEIN LOCALIZE A PARANUCLEAR POST-GOLGI NETWORK COMPARTMENT IN COMMUNICATION A PARANUCLEAR POST-GOLGI NETWORK COMPARTMENT IN COMMUNICATION EARLY ENDOSOMES (BY SIMILARITY).
Name=PC5B; Synonyms=Long;
IsoId=P41413-1; Sequence=Displayed.
Name=PC5A; Synonyms=Short;
IsoId=P41413-2; Sequence-VSP_005440
                                                       Event-Alternative splicing; Named isoforms-2
                                                                    ALTERNATIVE PRODUCTS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             114
                                             Comment-Additional isoforms
                                                                                                                                                                                                                                                                                                                                                                                                                 I., Marcinkiewicz
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GPD 309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LPE 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FSDDNCYVIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVR----DVYTSDC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ASANNSYCIVGIAYNAKIGGIRMLDGDVTDVVE-----AKSLGIRPNYIDIYSASW 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Acad. Sci. U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gland
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STANDARD;
                                                                                                                                                                                                                                                                                                                                                                PubMed-10749928;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=8341687;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (Rat).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (ISOFORM SHORT),
 Sequence=VSP_005440, VSP_005441;
                                                                                                                                                                                                                                                                                                                                                                                                     the
                                                                                                                                                                                                                                                                                                                                                                                                              .
                                                                                                                                                                                                                                                                                                                                                                                                  , Nakayama K., Lazure C., Se
EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                           90:6691-6695(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Rat
                                             seem
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1877
                                             ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TISSUE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ⋛
                                             exist;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           precursor (EC 3.4.21.-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SPECIFICITY
                                                                                          PROTEIN LOCALIZE
IN COMMUNICATION
                                                                                                                                                                                                                                                                                                                                                                                                              Seidah
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Seidah
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ah N.G.;
                                                                                                                                                                      INVOLVED
ACTIVATION
                                                                                                                                                                                                                                                                                                                                                                                                               z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Rattus
                                                                                                    IZED
                                                                                           WITH
                                                                                                                                      Xaa
                                                                                                    ď
                                                                                                                                                                                                                                                               of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             169
  CARBOHYD
CARBOHYD
CARBOHYD
CARBOHYD
                                                                             ACT_SITE
ACT_SITE
ACT_SITE
                                                       CARBOHYD
CARBOHYD
                                                                                                                         DOMAIN
DOMAIN
SITE
                                                                                                                                                           DOMAIN
DOMAIN
                                                                                                               SITE
                                              CARBOHYD
                                                                                                                                                                                   DOMAIN
                                                                                                                                                                                            DOMAIN
                                                                                                                                                                                                         TRANSMEM
                                                                                                                                                                                                                   DOMAIN
                                                                                                                                                                                                                                         CHAIN
                                                                                                                                                                                                                                                   PROPEP
                                                                                                                                                                                                                                                                         Transmembrane.
                                                                                                                                                                                                                                                               SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RETICULUM
                                                                                                                                    464
638
1825
1856
```

```
TISSUE SPECIFICITY: EXPRESSED IN THE INTESTINE, BRAIN, ADRENAL GLAND, ANTERIOR PITUITARY, THYROID, OVARIES, TESTIS AND LUNG. HIGHEST LEVELS ARE FOUND IN THE GUT, DUODENUM, JEJUNUM AND ILEUM. EXPRESSION IS HIGHER IN FEMALE THAN IN MALE REPRODUCTIVE ORGANS. DEVELOPMENTAL STAGE: FIRST DETECTED AT E9 IN HIGHLY RESTRICTED REGIONS OF THE NEURAL TUBE, IN CAUDAL MYOTOMES, AND AT THE MATERNO-EMBRYONIC JUNCTION OF THE UTERUS. AT E10, RESTRICTED EXPRESSION IS DETECTED IN THE OPTIC AND OTIC VESSICLES, THE ROOF CAURTED IN THE DETECTED IN THE OPTIC AND OTIC VESSICLES, THE ROOF CAURTED IN THE DEVELOPING NERVOUS SYSTEM HAS EXPANDED TO EXPRESSION IN THE DEVELOPING NERVOUS SYSTEM HAS EXPANDED TO
                                                   MULTIPLE REGIONS INCLUDING HIPPOCAMPUS, THALAMUS, HYPOTHALAMUS, BRAIN STEM, AND SPINAL CORD. EXPRESSION IS ALSO DETECTED IN SEVERAL PERIPHERAL ORGAN SYSTEMS, INCLUDING GUT, LUNG, ADRENAL
KYDNEY PRIMORDIA
                                                               ADRENAL AND
                                                                                                                                                                                                                                                                                                                                                  ဓ္ဓ
```

DOMAIN: THE PROPERTIDE ASSISTING THE FOLDING O DOMAIN ACTS AS AN INTRAMOLECULAR CHAPERONE OF THE ZYMOGEN WITHIN THE ENDOPLASMIC

DOMAIN: AC 1 AND AC 2 (CLUSTERS OF SORTING INFORMATION. AC 1 DIRECTS TWITH THE TGN SORTING PROTEIN PACS-1 F ACIDIC AMINO ACIDS) CONTAIN

SIMILARITY: Belongs to peptidase family SIMILARITY: Contains 1 homo B/P domain. SB.

use by non-profit institutions as long a modified and this statement is not removed: entitles requires a license agreement (See or send an email to license@isb-sib.ch). This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the El the European Bioinformatics Institute. There are no resti (See http://www.isb-sib.ch/announce/ as its content Usage by and restrictions EMBL outstation 18 a collaboration ioi 5 9

```
MERCPS; SOB.076; -.

R InterPro; IPR006212; Furin_repeat.

R InterPro; IPR002884; P_domain.

R InterPro; IPR002884; P_domain.

R InterPro; IPR00209; Peptidase_SB.

R InterPro; IPR000209; Peptidase_SB.

R Pfam; PF01483; P_proprotein; PARTIAL.

R PRINTS; PR00723; SUBTILISIN.

R PRONT; SM00261; FU; 6.

R PROSITE; PS00136; SUBTILASE_ASP; 1.

R PROSITE; PS00138; SUBTILASE_HIS; 1.

R PROSITE; PS00138; SUBTILASE_HIS; 1.

R PROSITE; PS00138; SUBTILASE_HIS; 1.

R PROSITE; PS00138; SUBTILASE_SER; 1.

R PROSITE; PS00138; SUBTILASE_SER; 1.

R PROSITE; PS00138; SUBTILASE_HIS; 1.

R PROSITE; PS00138; SUBTILASE_HIS; 1.

R PROSITE; PS00138; SUBTILASE_SER; 1.

R PROSITE; PS00138; 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; L14933; AAA99906.1;
EMBL; U47014; AAA87888.1;
PIR; B48225; B48225.
HSSP; Q99405; IMPT.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        34
116
1877
       452
602
1753
1844
1877
1177
523
1173
5214
388
388
2214
388
383
214
388
383
214
388
383
383
383
383
383
383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1768
1789
1877
                                                                                                                  CHARGE RE
CHARGE RE
CHARGE RE
N-LINKED
N-LINKED
N-LINKED
                                       N-LINKED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ಕ್ಷಿಕ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BY SIMILARITY.
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                        CELL ATTACHMENT
                                                                                                                                                                                                                                                                                                                                                                                                                               CLEAVAGE (AUTO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CYS-RICH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CYTOPLASMIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     POTENTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EXTRACELLULAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PROPROTEIN CONVERTASE SUBTILISIN/KEXIN
E RELAY SYSTEM (BY SIMILARITY).

INED (GLCNAC...) (POTENTIAL).

INED (GLCNAC...) (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MOTIF (CRM) REGION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                        SITE (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  splicing; Repeat;
```

Search Job ti	Qу	Qy Db	Quer Best Matc		FTT C
Search completed: August Job time : 14.4838 secs	67 - 161 c	21 I 110 V	y Match Local Si hes 29;	VARSPLIC SEQUENCE	CARBOHYD VARSPLIC
d: Augus 838 secs	FMFMNNAD	QKLVEENY : : KKRTKRDY	milarity Conser	916 1877 AA	1732 878
	TVYQHTFEK : : TILDDGIER	LQKLVEENYDLIKATYKNDPVW- :: : : : VKKRTKRDYDLSRAQSTYFNDPKWP	8.0%; 25.7%; vative	1877 \A; 207888	1732 915
1, 2003, 12:15:48	67 -FMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDN 118 	21 LQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKNVE-AW 66	Query Match 8.0%; Score 76.5; DB 1; Length 1877; Best Local Similarity 25.7%; Pred. No. 1.1e+02; Matches 29; Conservative 11; Mismatches 32; Indels 41; Gaps 6;	(in isoform PC5A). /FT1G-VSP_005440. 916 1877 Missing (in isoform PC5A). /FT1G-VSP_005441. 1877 AA; 207888 MW; 890955DC60534444 CRC64;	N-LINKED (GLCNAC) (POTENTIAL). XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

```
Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OM protein . protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         95
   Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                Score
                                                                                      seq
seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PIR_76:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-087-195-6
952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       August 1, 2003, 12:15:04; Search time 12.7771 Seconds (without alignments) 1294.578 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       283308 seqs, 96168682 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DKPVWADEAANGEHQDAWKH......NEYAAGLPVRDVYTSDCLPE
 GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd
 Length DB
   74796
AC1583
F75234
F70334
F70334
H85048
H82891
A8681171
A8681171
A86811
A86813
A868133
A868133
A868133
A868133
A86813
A8
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUMMARIES
                                                      hypothetical prote
probable cytochrom
probable cytochrom
hypothetical prote
probable transposo
hypothetical prote
beta-glucosidase (
IgA-specific metal
hypothetical prote
alpha-amylase (EC
hypothetical prote
alpha-amylase etyl t
serine-tRRA ligase
cuter membrane ush
ornithine acetyl t
serine-tRRA ligase
cspC protein - Clo
PACEAA - mouse (fr
probable phosphati
alpha-glucosidase
probable alpha-glu
isoleucyl-tRNA syn
                                                                                                                                                                                                                                                                                                                                                                                                hypothetical prot
                                                                                                                                                                                                                                                                                                                                                                                                                                                Description
                                                                                                                                                                                                                                                                                                                                                                                     hypothetical
internalin p
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 172
                                                                                                                                                                                                                                                                                                                                                                                     prote
```

77.5 8.1 487 2 B39490 subtilisin-like pr 77.5 8.1 515 2 H72455 hypothetical prote 77.5 8.1 652 1 JC22191 subtilisin-like pr 77.5 8.1 962 2 JC5571 subtilisin-like pr 77.5 8.1 969 1 A39490 subtilisin-like pr 77.5 8.1 975 2 JC5570 subtilisin-like pr 77.6 8.1 1157 2 F97255 fucturonate reduct 77 8.1 544 2 H86828 fucturonate reduct 78 8.0 298 2 F90495 conserved hypothetical prote 78 8.0 298 2 F90495 conserved hypothetical prote 78 8.0 387 2 D70090 hypothetical prote 79 8.0 672 1 573715 cytadherence acces 79 7.9 246 2 AII717 hypothetical prote 75.5 7.9 2461 1 HWHUFA alpha-L-fucosidase		43 /5		41	_	39 76	_	37		-		-			_	
487 2 B39490 S1 515 2 H72455 h) 652 1 JC2191 S1 965 2 JC5571 S1 969 1 A39490 S1 975 2 JC5570 ft 544 2 H86828 ff 754 2 T18238 . l) 915 2 B48225 p 298 2 F90495 h) 672 1 S73715 co 387 2 D89931 h) 1461 1 HWHUFA al				76 8		76.5 8										
2 B39490 SI 2 H72455 hy 2 H72455 si 2 JC5571 SI 1 A39490 SI 2 JC5570 fi 2 H86828 fi 2 T18238 . L) 2 F90495 cc 2 F90495 cc 2 D70090 hy 2 B8931 by 1 HWHUFA al																
	161 1	246 2	572 1	387 2	298 2	115 2	754 2	544 2	157 2	375 2	169)62 2	552 1	515 2	187 2	
subtilisin-like pr hypothetical prote subtilisin-like pr subtilisin-like pr subtilisin-like pr subtilisin-like pr fusion of alpha-gl fructuronate reduc lysophospholipase probable proprotei conserved hypothet hypothetical prote cytadherence acces hypothetical prote branched-chain alp alpha-L-fucosidase	HWHUFA	11558G	S73715	D70090	F90495	в48225	T18238	н86828	F97255	JC5570	A39490	JC5571	JC2191	H72455	в39490	
subtilisin-like pr hypothetical prote subtilisin-like pr subtilisin-like pr subtilisin-like pr subtilisin-like pr fusion of alpha-gl fructuronate reduc lysophospholipase probable proproted conserved hypothet hypothetical prote cytadherence acces hypothetical prote branched-chain alp alpha-L-fucosidase																
subtilisin-like pr hypothetical prote subtilisin-like pr subtilisin-like pr subtilisin-like pr subtilisin-like pr fusion of alpha-gl fructuronate reduc lysophospholipase probable proprotel conserved hypothet hypothetical prote cytadherence acces hypothetical prote cytadherence acces hypothetical prote branched-chain alp alpha-L-fucosidase							•									
isin-like prisin-like prisin-like prisin-like prisin-like prisin-like prisin-like prisin-like produce approate reduction proprotel ved hypothet setical prote serical proteserical proteseri	alpha	hranch	cytadh	hypoth	conser	probat	lysoph	fructu	fusion	Subtil	subtil	subtil	subtil	hypoth	subtil	
prote proke pr ke pr ke pr ke pr ke pr ke pr ha-ql fothet protet protet acces protes acces		₹ ₹	ัด	ĕ	ě.	le	JE OT	iron	of	181	181	191	181	let i	181	
	-L-fucos	od-chai		ical	id hyp	prop	phol1	ate	alp	n-11	n-11	n-11	n-11	Cal	n-11	

ALIGNMENTS

RESULT 1 S37786

	nypochecical proce
Db 169 -MYDHTFEDFTQSSIELDAFVFRHLDQLFHNSTLNSTLDYEIRQDGNVFFLHLLGC 223	isoleucine tRNA sy
QY /5 TYXQHTEKATPUKMYGYNKENAITYQTEDGQVLTDVLAFSDUNCYVIYALGP 12/	nypothetical prote isoleucine tRNA sy
	isoleucyl-tRNA syn
Db 117 EDVSAVTKGWKSHVNFDSFFNQSTHTYSFGSPDILPMFKDGASDPNKVDTW 168	probable alpha-glu
Qy 27 ENYDLIKATYKNIPYWGNOFTCVCTAAQNINEDEKNVEAWFWFMNNAD 74	probable phosphati
	PACE4A - mouse (fr
Matches 34: Conservative 30: Mismatches 64: Indels 41: Gaps 7:	cspC protein - Clo
	ornithine acetyl t
u'uah basirkan, iin	outer membrane ush
A;Cross-reterences: SD:S0001648; MIPS:YKL165c	hypothetical prote
A/Gene: SGD:MCD4	alpha-amylase (EC
Under the increotine sequence was summitted to the EMBH bata history's september 199	hypothetical prote
A;Experimental source: strain S2880 A:Experimental source: strain S2880	lga-specific metal
A;Cross-references: EMBL:Z26877; NID:g407482; PIDN:CAA81489.1; PID:g407483	beta-glucosidase (
A; Residues: 1-919 < VA3>	hypothetical prote
A; Molecule type: DNA	probable transposo
A: Status: nucleic acid sequence not shown: translation not shown	hypothetical prote
A; Accession: \$44563	probable cytochrom
A; Inter: DNA sequencing of a 30.2 km fragment focated between the fast and dark focated between the fast an	nypotherical proce
1EdSC 10, 33740, 1994	Incernatin procein
R: Wandenbol, M.; Bolle, P.A.; Dion, C.; Portetelle, D.; Hilger, F.	hypothetical prote
A; Experimental source: strain S288C	hypothetical prote
A;Cross-references: EMBL:Z28165; NID:q486288; PIDN:CAA82007.1; PID:q486289; MIPS:YKL1	
A; molecule type: DNA A; molecule type: DNA A; Residues: 1-919 <va2></va2>	Description
A; Accession: 53/995	
A; Reference number: S37976	
submitted to the Protein Sequence Database, March 1994	
R; Vandenbol, M.; Bolle, P.A.; Dion, C.; Portetelle, D.; Hilger, F.	bution.
A;CCOSS=Teterences: Embi:2200//; NID:940/402; FIDN:CAA01409.1; FID:940/403 A:Experimental gournee: 9train 9288C	lt being printed.
A; Residues: 1-919 <van></van>	
A; Molecule type: DNA	
A;Accession: S37786	
A; Reference number: S37786	
Submitted to the EMBL pata Library, september 1993 A.Describtion: DNA secuencing of a 36.2 kb fragment located between the FAS1 and LAPA	
R; Vandenbol, M.; Bolle, P.; Dion, C.; Portetelle, D.; Hilger, F.	
C; Accession: S37786; S37995; S44563	-
C; Date: 03-May-1994 #sequence_revision 03-May-1994 #text_change 29-Oct-1999	
C:Species: Saccharomyces cerevisiae	
Hypothetical protein initias: 'yeast (saccharomyces cerevisiae) N'Alformate namea: hynothetical protein vKifig	
03//000	

```
B
                                    QY
                                                                                                                                                                                                                                                                                         Science 294, 849-852, 2001

A; Authors: Kreft, J.; Kuhn, M.; Kunst, F.; Kurapkat, G.; Madueno, ok, C.; Schlueter, T.; Simoes, N.; Tierrez, A.; Vazquez-Boland, J. A; Title: Comparative genomics of Listeria species.

A; Reference number: AB1077; MUID:21537279; PMID:11679669

A; Accession: AC1583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    C;Date: 27-Nov-2001 #sequence_revision 27-Nov-2001 #text_change 27-Nov-2001
C;Accession: AC1583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT
AC1583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Map position: 3
A;Note: T4C21.260
C;Superfamily: Arabidopsis thaliana hypothetical protein T4C21.260
                                                                                                                                                                                             A;Cross-references: GB:AL592022; PIDN:CAC96435.1; A;Experimental source: strain Clip11262
                                                                                                                                                                                                                                   A; Molecule type: DNA
A; Residues: 1-1237 <GLA>
                                                                                                                                                                                                                                                                     A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                              D.; Jones,
                                                                                                                                                                                                                                                                                                                                                                                                                            R;Glaser, P.; Frangeul, L.; Buchrieser, C.; Amend, .; Dominguez-Bernal, G.; Duchaud, E.; Durand, L.; I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             C; Species: Listeria
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           internalin protein (LPXTG motif) homolog lin1204 [imported] - Listeria innocua
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      γo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Molecule type: DNA
A;Residues: 1-648 <CHO>
A;Cross references: EMBL:AL162295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Reference number: Z24479
A; Accession: T47896
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     R;Choisne, N.; Robert, C.; Brottier, P.; Wincker, P.; Cattolico, W.; Rudd, S.; Lemcke, K.; Mayer, K.F.X.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           hypothetical protein T4C21.260 - Arabidopsis thaliana C;Species: Arabidopsis thaliana (mouse-ear cress) C;Date: 20-Apr-2000 #sequence_revision 20-Apr-2000 #t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Experimental source:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       submitted to the Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           C; Accession:
                                                                              Matches
                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
    775
                                                                                                                                                                                                                                                                                                                                                                                                            L.M.; Karst,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    194 HINQWQDIVMGFHADGDLKHLGQKETIDRIKQVWTVGAKLYGIPESFIRVCVAA-----C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120 YVIYALGPDGSGAGYELWATDYT---DVPA 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      224
                                        19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2 KPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEK
                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 T47896
KYTYTLNVENLDGIKATPKEVIVYIDAVQGANITVKYEDESGNKLAENSILTGNVGEEYS
                                        KHLQKLVEENYDLIKATYKN-----DPVWGNDFT----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NVEAW---FMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNC 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RAVWKDRNEETAYLTAWKRIQD------KLTSRLDPATGNEFLCF---KNNSQQFVS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DTAGHSYRPYSAEYYDNVKYIDDQIPI-LIDKVNKFFADDKTAFIFTAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DGSGAGYELWATDYTD------VPASCLEKFNEYAAGLPVRDVYTSD 168
                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cultivar Columbia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence Database, March
                                                                                              9.28;
24.88;
                                                                              23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 88; DB Pred. No. 5.1;
                                                                                              Score 88;
Pred. No.
                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20-Apr-2000 #text_change 05-May-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BAC clone
                                                                                              12:
                                                                                                                                                                                                                                                                                                                                                                                                                            L.; Dussurget,
                                                                                                                2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             <u>ب</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           69;
                                                                                                                                                                                                                 PID:g16413678; GSPDB:GN00178
                                                                                                                                                                                                                                                                                                                                                                                                                                                A.; Baquero, F.;
                                                                                                                Length 1237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 648
                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                      ----CVGTAAQNLN 57
                                                                                                                                                                                                                                                                                                                                                                                                                          0.;
                                                                            36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  271
                                                                                                                                                                                                                                                                                                                                                                                                                            Entian, K.D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       L.; Artiguenave,
                                                                                                                                                                                                                                                                                                                                                  .
.
.
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                Berche,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                  Maitournam, A.; M
Voss, H.; Wehland
  834
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    248
                                                                                                                                                                                                                                                                                                                                                                                                                                              ۳
:,
                                                                          6
                                                                                                                                                                                                                                                                                                                                                                                                                          ; Bloecker
Fsihi, н.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ή
:
:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
```

```
DNA Res.
A; Title:
                                                                                                                                                                                                                                                            Qy
                                                                                                                                                                                                                                                                                                                                                                       멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Cross-references: EMBL:D90903; GB:AB001339; NID:g1652127; PIDN:BAA17148.1; A;Note: the nucleotide sequence was submitted to the EMBL Data Library, June C;Superfamily: Synechocystis hypothetical protein slr1920
    吊
                                                                                  δÃ
                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Reference number: S74322; MUID:97061201; PMID:8905231
A;Accession: S75234
A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         C;Date: 25-Apr-1997 #sequence_revision 25-Apr-1997
C;Accession: S75234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     C; Species: Synechocystis A; Variety: PCC 6803
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÔ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Residues: 1-368 < KAN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        R; Kaneko,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       hypothetical protein slr1920 -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Kaneko, T.; Sato, S.; Kotani, K.; Okumura, S.; Shimpo, S.; A Res. 3, 109-136, 1996
Title: Sequence analysis of the state of the sequence analysis 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local
                                                                                                                                                                                                                                                                                                                                                                       112
206 DNLTYDKWQALVHALDETGVSLNLVNKHQEY----PFREMFTFD 245
                                                                                                                                                                                   157 PAIHQLLLIRYFIPPVPDDMHQFDN---IELPPQFEKILTDVINFCDLN---
                                                                                                                                                                                                                                                                      74 DTVYQ----HTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCYVIYALGPDG 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                         22 QKLVEENYDL-----IKATYKNDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMFMNNA 73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     l Similarity
43; Conserv
                                                                                                                                                                                                                                                                                                                                                                       QKLYRESFNLQPGHLLVAIKDIRKKSIVSFKDY-----ADNLDK---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LSGNVDENYVTTA----KTFTGYEL----IETPSNAEGKFSENA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LAFSDDNCYVIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYA 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SSAKEILGYTLTEMPSNAQGEFSLEEQTVTYIYSKNPVPAKDITVQYTDEDGMELAPTET 894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EDEKNVEAWFMFMNNADTVYQHTFEKATPDKMYGYN----KENAITYQTEDGQVL--TDV 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of the genome of
                                                                                       -ATDYTDVPASCLEKFNEYAAGLPVRDVYTSD 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Synechocystis sp.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             H.; Tanaka, A.; Asamizu, Takeuchi, C.; Wada, T.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 86.5; DB
Pred. No. 3.4;
24; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            the unicellular cyanobacterium Synechocys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    #text_change 20-Jun-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 368;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Watanabe,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nakamura,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A.; Yamada,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Y.; Miyajima,
Yamada, M.; Yas
                                                                                                                                                                                                                                                                                                                                                                       156
```

RESULT 5
B70017
B70017
B70017
C:Species: Bacillus subtilis
C:Species: Bacillus subtilis
C:Species: Bacillus subtilis
C:Date: 05-Dec-1997 #sequence_revision 05-Dec-1997 #text_change 09-Dec-2002
C:Accession: B70017
R:Kunst, F:, Ogasawara, N.; Moszer, I.; Albertini, A.M.; Alloni, G.; Azevedo, V.; Ber C.; Bron, S.; Brouillet, S.; Bruschi, C.V.; Caldwell, B.; Capuano, V.; Carter, N.M.; A.; Ehrlich, S.D.; Emmerson, P.T.; Entian, K.D.; Errington, J.; Fabret, C.; Ferrari, A.; Ehrlich, S.D.; Emmerson, P.T.; Entian, K.D.; Errington, J.; Fabret, C.; Ferrari, Nature 390, 249-256, 1997
A;Authors: Foulger, D.; Fritz, C.; Fujita, M.; Fujita, Y.; Fuma, S.; Galizzi, A.; Galiech, J.; Harwood, C.R.; Henaut, A., Hilbert, H.; Holsappel, S.; Hosono, S.; Hullo, M. Koetter, P.; Koningstein, G.; Krogh, S.; Kumano, M.; Kurita, K.; Lapidus, A.; Lardino A;Authors: Lauber, J.; Lazarevic, V.; Lee, S.M.; Levine, A.; Liu, H.; Masuda, S.; Mau V, M.; Ogawa, K.; Ogiwara, A.; Oudega, B.; Park, S.H.; Parro, V.; Pohl, T.M.; Portete Rieger, M.; Rivolta, C.; Rocha, E.; Roche, B.; Rose, M.; Sadaie, Y.; Sato, T.; Scanl A;Authors: Schleich, S.; Schroeter, R.; Scoffone, F.; Sekiguchi, J.; Sekowska, A.; Se akeuchi, M.; Tamakoshi, A.; Tanaka, T.; Terpstra, P.; Tognoni, A.; Tosato, V.; Uchiya T.; Winters, P.; Wipat, A.; Yamamoto, H.; Yamane, K.; Yasumoto, K.; Yata, K.; Yoshida A;Authors: Yoshikawa, H.F.; Zumstein, E.; Yoshikawa, H.; Danchin, A.
A;Title: The complete genome sequence of the Gram-positive bacterium Bacillus subtili A;Reference number: A69580; MUID:98044033; PMID:9384377
A;Status: nucleic acid sequence not shown; translation not shown

```
RESULT 7

B81171

C:Species: Neisseria meningitidis
C:C:Date: 31-Mar-2000 #sequence_revision 31-Mar-2000 #text_change 19-Jan-2
C:Accession: B81171

R:Tettelin, H.; Saunders, N.J.; Heidelberg, J.; Jeffries, A.C.; Nelson, Hickey, E.K.; Haft, D.H.; Salzberg, S.L.; White, O.; Fleischmann, R.D.; ri, H.; Qin, H.; Vamathevan, J.; Gill, J.; Scarlato, V.; Masignani, V.; Science 287, 1809-1815, 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         deno-Tarraga, A.M.; Chillingworth, T.; Cronin, A.; Davies, R.M.; 11, M.; Rutherford, K.; Simmonds, M.; Skelton, J.; Stevens, K.; Wature 413, 523-527, 2001
A;Title: Genome sequence of Yersinia pestis, the causative agent A;Reference number: AB0001; MUID:21470413; PMID:11586360
A;Accession: AF0334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               probable cytochrome c-type biogenesis protein YPO2743 [imported] - Yersinia C;Species: Yersinia pestis C;Species: Yersinia pestis C;Date: 02-Nov-2001 #sequence_revision 02-Nov-2001 #text_change 02-Nov-2001 C;Accession: AF0334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Gene: yurC
C; Superfamily: carbon-mono:
C; Keywords: oxidoreductase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Residues: 1-745 <KUN>
A; Cross-references: GB:
A; Experimental source: C; Genetics:
                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                               ş
                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                       ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Molecule type: DNA
A; Residues: 1-408 < KUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               R; Parkhill, J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AF0334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Cross references: GB: AL590842;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Status:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Superfamily: carbon-monoxide
                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                YP02743
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         165
                                                                                                                                                                                                                                                                                         170
                                                                                                                                                                                                                                                                                                                                                           114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       74
                                                                                                                                                                                                                                                                                                                         69
                                                                                                                                                                                                                                                                                                                                                                                            13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       22 OKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMFMNN-----A
                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EEIAEAALELIQVEYKELEVMDSPEKALRPNAQRLHEDGNILHRAF-FSNGDVEEGFQAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DTVFEETYE - - LPRQMHTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DTVYOHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCYVIYALGPDGSGAG
                                                                                                                                                                                                                                                      DNCYVIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAG 158
                                                                                                                                                                                                                                                                                        LGRYGMALNNATTATQAFAHAYQLA-PDNNEVKLGYYEVLTRSNDPEDNQLATQMLR---
                                                                                                                                                                                                                                                                                                                      F-----MNNADTVYQ----HTFEKATPDK---MYGYNKENAITYQTEDGQVLTDVLAFSD
                                                                                                                                                                                                                                                                                                                                                           EQVAAWHQVAAQMPE----LRARVANEHADPLSMEDVARLGLGLRTSLQQDAGNVNDWMM
                                                                                                                                                                                                                                                                                                                                                                                          EHODAWKHLOKLVEENYDLIKATYKN---DPVWGNDFTCVGTAAQ-NLNEDEKNVEAWFM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      YE 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Wren, B.W.; Thomson, N.R.; Titball, R.W.; Holden, M.T.G.; Pren. M.; Chillingworth, T.; Cronin, A.; Davies, R.M.; Davis, P.; Dovid, K.; Simmonds, M.; Skelton, J.; Stevens, K.; Whitehead, S.;
                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GB: 299120;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                strain
 Sun,
                                                                                                                                                                                                                                                                                                                                                                                                                                             8.8%;
24.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9.0%;
 ۲.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GB:AL009126; NID:g2635613; PIDN:CAB15238.1; PID:g2635745
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           dehydrogenase
 Smith, H.O.;
                                                                                                                                                                                                                     -AMVGQDHTNLRAMSLLAFNAFEQG
                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 84;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PIDN:CAC92981.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          85.5;
No. 10;
                                                                                               31-Mar-2000 #text_change 19-Jan-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -METEGGVAVPE---
                                                                                                                                  Neisseria meningitidis (strain
                                                                                                                                                                                                                                                                                                                                                                                                                                               σ
                                                                                                                                                                                                                                                                                                                                                                                                                                        DB
5.5;
Fraser,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           molybdoprotein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ď₿
                                                                                                                                                                                                                                                                                                                                                                                                                                                             2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PID:g15980720;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         <u>..</u>
                                                                                                                                                                                                                                                                                                                                                                                                                             60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
 C.M.; Moxon,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -DDGGFTMYA---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          27;
                                                                                                                                                                                                                                                                                                                                                                                                                             42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of plague
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GSPDB:GN00175
 E.R.;
                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTOHG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                               Dougherty,
Pizza, M.
Rappuoli,
                                                                  X.E.;
                                                                                                                                  MC58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Prentice,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        73
                                                                                                                                                                                                                                                                                                                                                                                            89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       206
                                                                                                                                                                                                                                                                                                                                                           169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Dougan,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   pestis
                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                  Eisen,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ugan, G.;
Barrell,
 æ
::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (stra
```

hypothetical protein UU441 [imported] - C;Species: Ureaplasma ureallyticum C;Date: 18-Aug-2000 #sequence_revision 2C;Accession: H82891 R;Glass, J.I.; Lefkowitz, E.J.; Glass, J.

submitted to GenBank, February 2000 A; Description: The complete sequenc

sequence

of,

Ureaplasma

urealyticum:

Alternate views

of. G.H.

J.S.; Heiner, 20-Aug-2000

C.R.; Chen,

E.Y.; Cassell,

#text_change urealyticum

20-Aug-2000

Ureaplasma

RESULT 9 H82891

```
R; anonymous, The Euro
Nature 402, 769-777,
                                                                                                                                                                                                                                                                                                                                                                                                                                    probable transposon protein (imported) - Arabidopsis thallana (;Species: Arabidopsis thaliana (mouse-ear cress) C;Date: 16-Feb-2001 #sequence_revision 16-Feb-2001 #text_chan C;Accession: H85048
                           δÃ
                                                            В
                                                                                   Q
                                                                                                                        밁
                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                          A; Residues: 1-745 <S
                                                                                                                                                                                                                                                                                                                                                          A; Reference number: A85001; A; Accession: H85048
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Experimental source: C; Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule type: DNA
A; Residues: 1-133 <T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Title: Complete genome sequence of Neisseria meningitidis A;Reference number: A81000; MUID:20175755; PMID:10710307 A;Accession: B81171 A;Status: preliminary
                                                                                                                                                                                                                                                                    A; Gene: AT4g03860
                                                                                                                                                                                                                                                                                                 A; Cross-references:
                                                                                                                                                                                                                                                                                                                                             A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                        A; Title: Sequence and analysis of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     H85048
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Cross-references:
                                                                                                                                                                                      Best Loc
Matches
                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                   Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                      POCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NMB0676
338
                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                122
                                                                                           60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ω
                                                                                                                                                                                      L Similarity
42; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        l Similarity
42; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EHQDAWKHL----QKLVEENYDLIKATYKNDPVWG---NDFTCVGTAAQNLN-EDEKNVE
EELFGF-PSGNGTKPKFERKELKDLWATSGNNVPLNSARSKSNQ 380
                                                                                                                                          DEAANGEHQ-DAWKHLQKLVEENYDLIKATY----KNDPVWGNDFTCVGTAAQ-NLNED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----PDIP----QLWAQKITALNYSGL-NLNQYGVASPCRTICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFS----DDNCYV 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QHIEKWQHLSREEQKILAE-------VWGLVQNDDQEVHYEMLKLNAPDEASGE
                                                                                                                          DEDIETEYEPESWRMETKLLNKPDEVTVEEYIRFFEMND-FWGTRYPCYETLAQLGLLED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FWFRMAETLSTL-----
                                                                                         EKNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNC
                                                                                                                                                                                                                                                                                                                                                                                                          European Union Arabidopsis Genome 177, 1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                <TET>
                                                                                                                                                                                                                                                                                                                <ST0>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GB:AE002422;
ce: serogroup
                                                                                                                                                                                                                                                                                                 :NC_001268;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8.8%;
                                                                                                                                                                                                   8.8%;
25.6%;
                                                                                                                                                                                                                                                                                                                                                                           sis of chromosome 4 of the plant Arabidopsis thaliana MUID:20083488; PMID:10617198
                                                            VQHQFEKCHLETLMSY - - - PYATYKEERIEFLS - TLQLSIKKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        17;
                           ----YELWATDYTDVPA-SCLEKFNE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GB:AE002098; NID:g7225898; PIDN:AAF41094
B, strain MC58
                                                                                                                                                                                    Score 83.5; D
Pred. No. 16;
21; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 83.5; D
Pred. No. 1.7;
                                                                                                                                                                                                                                                                                                NID: g7267141;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ----LRMNGGRLATAVSILSVMIEDN---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BB
                                                                                                                                                                                                                     DВ
                                                                                                                                                                                                                                                                                                 PIDN: CAB80809.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     <u>ب</u>
                                                                                                                                                                                        62;
                                                                                                                                                                                                                  2
                                                                                                                                                                                                                                                                                                                                                                                                                        Sequencing Consortium,
                                                                                                                                                                                                                                                                                                                                                                                                                                                      #text_change
                                                                                                                                                                                                                   Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           serogroup
                                                                                                                                                                                                                     745;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        53;
                                                                                                                                                                                      39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       16-Feb-2001
                                                                                                                                                                                                                                                                                                 GSPDB:GN00140
                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             strain
                                                                                                                                                                                                                                                                                                                                                                                                                       The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ļ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          49
                                                                                                                          298
                                                                                                                                                       59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PID:9722
                                                                                                                                                                                                                                                                                                                                                                                                                        dS
```

```
RESULT 11
A60272
                                                                                                                                                                                                                                                                                                                                                                                                     A; Nedworf - Charlet type: DNA
A; Residues: 1-475 <STO>
A; Cross-references: GB: AE005176; PID: g12724484;
A; Cross-references: Strain IL1403
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A86811
beta-glucosidase (EC 3.2.1.21) [imported] - Lactococcus lactis subsp. lactis (strain C;Species: Lactococcus lactis subsp. lactis
C;Date: 23-Mar-2001 #sequence_revision 23-Mar-2001 #text_change 03-Aug-2001
                                                                                                δõ
                                                                                                                               В
                                                                                                                                                        200
                                                                                                                                                                                     В
                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Reference number: A86625; MUID:21235186; PMID:11337471
                                                                          밁
                                                                                                                                                                                                                                           뫄
                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                    C;Superfamily: Agrobacterium beta-glucosidase C;Keywords: glycosidase; hydrolase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-450 <GLA>
A;Cross-references: GB:AE002140; GB:AF222894; NID:g6899420; PIDN:AAF30853.1; GSPDB:GN001
A;Experimental source: serovar 3; biovar 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R;Bolotin, A.; Wincker, P.; Mauger, S.; Jaillon, O.; Malarme, K.; Weissenbach, Genome Res. 11, 731-753, 2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
  IgA-specific
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    몽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Reference number: A82870
A; Accession: H82891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Genetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Gene: UU441
                                                                                                                                                                                                                                                                                                                                                                                                Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; Genetics:
                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                                                                                                                                                                                                Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Loca L
                                                                                                                                                                                     326 SFNKRGVRMNADRGWEIHPQTIYEIAKRIQEDYGNI-SWFISEN---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           code:
                                                                                                    146
                                                                                                                                                                                                                                         275 LWQSEA-----EDLKRIKENKVDLLGVNYYHPSRVQEPEYSSDSLAQDWRPDKYYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               103
                                                                                                                                                                                                                  49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         76
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19
                                                                                                                                                                                                                                                                     4 VWADEAANGEHQDAWKHLQKLVEENYDLIKATYKN-----DPVWGNDFTC------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     28;
 metalloendopeptidase (EC
                                                                                                                                                                                                                                                                                                              Similarity 17.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                          IDCWSWRNSY 429
                                                                                                   ASCLEKFNEY 155
                                                                                                                             ---GMGVENEEHFKDEEGQIQDDYRIIFTTEHLFWLHKAIQEGSNCFGYHVW---
                                                                                                                                                      KMYGYNKENAITYQTEDGQVLTDV-LAFSDDNCYVIYALGPDGSGA-GYELWATDYTDVP 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KNGHIL 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EDGQVL 108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KRELKKYIDTLNKDDIVNNTINKYKFKNYIYDFISYYFDIINIFSAGNSYNDE--IRYRN 133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EKNVEAWFMFMNNAD----TVYQHTFEKATPDKM------YGYNKENAITYQT 102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DETSENSHIKIWKELDWLIQNDVKIINHSYGWSP---NDFLNIGFYNFINGKEINDDKDF 75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVG----TAAQNLNED---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SGC3
                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8.7%;
                                                                                                                                                                                                               -----VGTAAQNLNEDEKNVEAWFMFMNNADTVYQHTFEKATPD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25;
                                                                                                                                                                                                                                                                                                   29;
                                                                                                                                                                                                                                                                                                                Score 82.5;
Pred. No. 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 82.5;
Pred. No. 10;
                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
  3.4.24.13) -
                                                                                                                                                                                                                                                                                                                           DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              B
                                                                                                                                                                                                                                                                                                                                                                                                                         PIDN: AAK05587.1;
                                                                                                                                                                                                                                                                                                 54;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2;
Streptococcus sanguis
                                                                                                                                                                                                                                                                                                                          Length 475;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                 73;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  29;
                                                                                                                                                                                                                                                                                                                                                                                                                          GSPDB:GN00146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                               -TP
                                                                                                                                                                                                               87
                                                                                                                                                                                                                                                                     48
                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ehr1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              H
              밁
                                       Ş
                                                                      밁
                                                                                             Ş
                                                                                                                                                                                   A; Gene: NMA0876
                                                                                                                                                                                                                                                                                                                                                                                                                          G81933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ΩV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                        A; Residues: 1-133 < PAR>
                                                                                                                                                                                                                                                       A; Molecule type: DNA
                                                                                                                                                                                                                                                                    A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Residues:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type:
                                                                                                                                                                                                                                                                                                                                                                    Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                      12
                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1311 AKGLLQAP 1318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            138
              50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  88
                                                                      ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1-1668 <GIL>
                                                                                                                                                                                                                                                                                                                   J.; ...
Jagels, ...
-06, 2000
                                                                                                                                         Similarity
              FWFRMAETLSTL-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ----FGDDTTV--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATDYTDVP 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8.6%;
                -PPNR---
```

```
A;Uross-references: GB:AL162754; GB:AL157959; NID:g7379424; A;Experimental source: serogroup A, strain Z2491 C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         R;Gilbert, J.V.; Plaut, A.G.; Wright, A.
Infect. Immun. 59, 7-17, 1991
A;Title: Analysis of the immunoglobulin A protease gene A;Reference number: A60272; MUID:91100011; PMID:1987065
A;Accession: A60272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Nature 404, 502-506, 2000
A;Title: Complete DNA sequence of a serogroup A strain of A;Reference number: A81775; MUID:20222556; PMID:10761919
A;Accession: G81933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               hypothetical protein NMA0876 [imported] - Neisseria meningitidis (strain Z2491 C;Species: Neisseria meningitidis C;Date: 05-May-2000 #sequence_revision 05-May-2000 #text_change 02-Feb-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Start codon: GTG
C;Superfamily: Streptococcus sanguis IgA-specific metalloendopeptidase
C;Keywords: hydrolase; metalloproteinase; tandem repeat; zinc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N;Alternate names: IgA protease; immunoglobulin Al
C;Species: Streptococcus sanguis
C;Date: 03-Mar-1993 #sequence_revision 03-Mar-1993
C;Accession: A60272
R;Gilbert, J.V.; Plaut, A.G.; Wright, A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R;Parkhill, J.; Achtman, M.; James, ; Holroyd, S.; Jagels, K.; Leather,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          C;Comment: This protein is shown from the start of translation the start codon is shown in entry B60272.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Status: not compared with conceptual translation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1160 DRYRNNEHR-AGAELNKFVEDNAQETAKRQRDHYDYWYRILDEQGREKLYRNILVYDAYK 1218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1265 SVYYMGYRMLDKDGAITYTHEMTHD------SDNEIY----LGGYGRRSGLGPEFF 1310
                                                                                                                                                     13 EHODAWKHL----OKLVEENYDLIKATYKNDPVWG---NDFTCVGTAAQNLN-EDEKNVE
                                               AWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFS---DDNCYV 121
                                                                                                     QHIEKWQHLSREEQKILAE----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KMY--GY---NKENAITY---QTEDGQVLTDVLAFSDDNCYVIYALGPDG--SGAGYELW 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DEAANGEHQDAWKHLQKLVEEN-----YD----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMFMNNA------DTVYQHTFEKATPD 87
                                                                                                                                                                                                                               8.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            12; Mismatches
                                                                                                                                                                                                       Score 81.5; DI Pred. No. 2.6; L9; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 82;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -DKATVEAQFDSSNPAMKYFFGPVGNKVVHNKHGAYATGD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       K.D.; Bentley, S.D.; Churcher, C.; Klee, S.; Moule, S.; Mungall, K.; Quail, M.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB
                                                                                                     - VWGLVQNDDQEVHYEMLKLNAPDEASGE
-SLDLRMNGGRLATAVSILSVMIEDN---
                                                                                                                                                                                                                               .
6;
                                                                                                                                                                                                                                                             DΒ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2;
                                                                                                                                                                                                             52;
                                                                                                                                                                                                                                                          2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            proteinase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 1668
                                                                                                                                                                                                                                                          Length 133;
                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Neisseria menigitidis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                       PIDN:CAB84156.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of this gene as determ
                                                                                                                                                                                                          53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21-Jan-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ---LIKATYK 37
                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1264
                                                                                                     49
                                                                                                                                                  64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S.R.; Mo
Rajandre
                                                                                                                                                                                                                                                                                                                                                                                     PID:9737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     serogr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             22491
```

```
RA Adams N.D., Celniker S.E., Helt R.A., Evans C.A., Gocayne J.D.,
RA Adams N.D., Celniker S.E., Hilt R.A., Sabburner M., Henderson S.N.,
RA Bunnatides P.G., Scherer S.E., Helt R.A., Sabburner M., Henderson S.N.,
RA Sutton G.G., Wortman J.R., Yandell M.D., Zhang Q., Chen L.X.,
RA Brandon R.C., Rogers Y.H.C., Blazel R.G., Champe M., Ffeiffer B.D.,
RA Ballew R.M., Basu A., Baxendale J., Bayraktareglu L., Beasley E.M.,
RA Ballew R.M., Basu A., Baxendale J., Bayraktareglu L., Beasley E.M.,
RA Buril J.F., Agbayani A., An H.-J., Andrews-Ffannkoch C., Baldwin D.,
RA Beeson K.Y., Benos P.V., Berman B.P., Bhandari D., Bolshakov S.,
RA Burik K.C., Busam D.A., Butler H., Cadleu E., Center A., Chandra I.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Glodek A., Gong F., Gorrell J.H., Gu Z., Gann P., Harris M.,
RA Glodek A., Gong F., Gorrell J.H., Gu Z., Gann P., Harris M.,
RA Harris N.L., Harvey D., Helman T.J., Hernandez J.R., Houck J.,
RA Harris N.L., Kalush F., Karpen G.H., Ke Z., Kennison J.A., Ketchum K.A.,
RA Kinmel B.E., Kodira C.D., Kraft C., Kravitz S., Kulp D., Lai Z.,
RA Menkulov G., Milshina N.V., Mobarry C., Morris J., Moshrefi A.,
RA Melson D.R., Nelson K.A., Nixon K., Nusskern D.R., Pacleb J.M.,
RA Rainert K., Remington K., Saunders R.D.C., Scheeler F., Shen H.,
RA Rainert K., Remington K., Saunders R.D.C., Scheeler F., Shen H.,
RA Rainert K., Remington K., Saunders R.D.C., Scheeler F., Shen H.,
RA Rainer E., Syradling A.C., Stapleton M., Skupski M.P., Smith T.,
RA Rainer E., Vener F., Zaveri J.S., Zhan M., Zhang G., Zhao Q., Zheng L.,
The genome sequence of Drosophila melanogaster.*;
RN Clibs R.A., Zhong F.N., Zhong W., Zhong S., Zhu X., Smith H.O.,
RN Clibs R.A., Shu B., Shith H.O.,
RN Clibs R.A., Shith B., Shith H.O.,
RN Clibs R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q9W3B3;
Q9W3B3;
Q1-MAY-2000
Q1-MAY-2000
Q1-MAR-2003
               Stapleton M., Brokstein P., Hong L., Agbayani A., Carlson J., Champe M., Chavez C., Dorsett V., Farfan D., Frise E., George Gonzalez M., Guarin H., Li P., Liao G., Miranda A., Mungall C. Nunco J., Pacleb J., Paragas V., Park S., Phouanenavong S., Wa Yu C., Lewis S.E., Rubin G.M., Celniker S.; Submitted (OCT-2001) to the EMBL/GenBank/DDBJ databases. EMBL; AE003445; AAP46419.1; -. EMBL; AF060729; AAL28277.1; -. EMBL; AY060729; AAL28277.1; -. FlyBase; FBgn0030066; CG1085. InterPro; IPR003754; HEM4. 1. InterPro; IPR001309; ICE_D20. Pfam; PF02602; HEM4; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Drosophila melanogaster (Fruit fly).
Eukaryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
Neoptera; Endopterygota; Diptera; Brachycera; Muscomorpha;
Ephydroidea; Drosophilidae; Drosophila.
NCBI_TaxID=7227;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CG1885 protein (GH17465P).
                                                                                                                                                                                                                                                                   STRAIN-Berkeley;
                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=20196006; PubMed=10731132;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Tremburel 13, (Tremburel 13, (Tremburel 23,
CASPASE_HIS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Created)
Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ₿
                                                                                                                                                                                                    ٦ ج
د د
```

```
PRESIDENT PROPERTY OF PROPERTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 41
Query Match
Best Local S
Matches 20
                                                                                                                                                                                                                                                                                       PRINTS; PR00759; BASICPTASE.
ProDom; PD000222; Kunitz_BPTI; 1
SMART; SM00408; IGC2; 2.
SMART; SM00131; KU; 10.
SMART; SM00209; TSP1; 7.
SMART; SM00217; WAP; 1.
                                                                                                             Signal.
SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Lacunin precursor.
Manduca sexta (Tobacco hawkmoth) (Tobacco hornworm).
Manduca sexta (Tobacco hawkmoth) (Tobacco hornworm).
Eukaryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;
Neoptera; Endopterygota; Lepidoptera; Glossata; Ditrysia; Sphingiodea;
Sphingidae; Sphinginae; Manduca.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                         PROSITE: PS00317; 4_DISULFIDE_CORE;
PROSITE: PS00280; BPTI_KUNITZ_1; 8.
PROSITE: PS50279; BPTI_KUNITZ_2; 10.
PROSITE: PS50835; IG_LIKE; 2.
PROSITE: PS50092; TSP1; 5.
                                                                                                                                                                                                                                                                                                                                                                                                                         pfam; PF02822; Antistasin; 4.
pfam; PF00041; ig; 2.
pfam; PF000014; Kunitz_BPTI; 10.
pfam; PF00095; wap; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          protein, accompanies
sexta.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE-99457716; PubMed-10528409;
Mardi J.B., Martos R., Walden K.K., Lampe D.J., Robertson H.M.;
"Expression of lacunin, a large multidomain extracellular matrix
protein, accompanies morphogenesis of epithelial monolayers in Mo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-MAY-2000 (TrEMBLrel.
01-MAY-2000 (TrEMBLrel.
01-MAR-2003 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Insect Biochem.
EMBL; AF078161;
HSSP; P12111; 28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q9U8G8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q9U8G8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            InterPro; IPR004094; InterPro; IPR007110;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro;
                                                                                                                                                       [mmunoglobulin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IPR003006;
IPR002223;
IPR000884;
IPR002221;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ENYDLIKATYKN-DPVWGNDFT---CVGTAAQNLNEDEKNVEAWFMFMNNADTVYQHTFE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DVPASCLEKFNEYAAGLPVRDVYTSDCLPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LSTLDQLFTHGK-----QTGNARALGDYIVDTFDGSRALPLLLPCGN-----LATD--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCYVIYALGPDGSGAGYELWATDYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KNLDELRAKLQNPDKYAGIIFTSPRCVEAVAESLNLGEL-PGGWKMLHNYAVGEVTHNLA
                                                                                        1
3198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -TLLSKLAENGESVDACEVYETRCHPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2KNT
                                                                                                                                                         domain; Protease inhibitor; Serine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ŗ
                                                                                        ₽,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAF04457.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MOL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            30895 MW;
                       9.78;
                                                                                        21 PO
349364 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TSP1.
WAP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ig_MHC.
Kunitz_BPTI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Antistasin
Ig-like.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ig_c2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13,
13,
23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
Last sequential Last anno
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     29:883-897(1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pred. No. 2.6;
l; Mismatches
                       Score 92.5;
Pred. No. 71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score
                                                                                                               POTENTIAL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            F8DC4ABC2DA84496 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                    10
                                                                                        AB4ACD459C0D9134 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sequence update)
annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                93.5;
No. 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ₹
                                            DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 update)
                                            ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                            Length 3198;
                                                                                                                                                         protease inhibitor;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 in Manduca
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
```

Conservative

Mismatches

24;

Indels

5

Gaps

<u>س</u>و

```
Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OM protein - protein search, using sw model
                                                                                                                                                                                      Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                               Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Scoring table:
                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9:
                                                                                                                                                                                                                           Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                            Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        seq length: 0 seq length: 2000000000
  SPTREMBL_23:*
1: sp_archea:*
2: sp_bacteria
3: sp_fungi:*
                                                                                                                                                                          Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-087-195-6
952
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                August 1, 2003, 12:15:04; Search time 49.4705 Seconds (without alignments) 897.203 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        830525 seqs, 258052604 residues
  22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DKPVWADEAANGEHQDAWKH.....NEYAAGLPVRDVYTSDCLPE 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                         sp_organelle:*
sp_phage:*
sp_plant:*
                                                                                                                            . 7
. 7
                                                                                                                                                                                                                                                                    sp_unclassified:*
sp_rvirus:*
sp_bacteriap:*
sp_archeap:*
                                                                                                                                                                                                                                                                                                          sp_rodent:*
sp_virus:*
sp_vertebrate:*
                                                                                                                                                                                                                                                                                                                                                                      sp_mammal:*
sp_mhc:*
                                                                                                                                                                                                                                                                                                                                                                                                                        sp_archea:*
sp_bacteria:*
                                                                                                                                                                                                                                                                                                                                                                                            sp_invertebrate:*
                                                                                                                                                                                                                                                                                                                                                                                                     sp_human:*
                                                                                                                                                                                                                                                                                                                                                                                                               sp_fungi:*
                                                                                                                                                                            Length
  209
277
3198
2017
386
648
648
677
1237
1237
1237
1854
1854
1858
1858
1858
                                                                                                                                                                             DB
 10
10
10
10
10
10
                                                                                                     2 L 2 2 2 2 2
          6 Q8XP49
Q31765
Q91228
Q81228
6 Q92CG8
6 Q92CG8
033764
Q33759
6 P31312
Q910H2
Q33763
                                                                                                                        Q8WSK7
Q9W3B3
Q9U8G8
Q8ICR6
                                                                                                                                                                            IJ
                                                                                                                                                                                                          SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      830525
                                     Q8wsk7 dermacentor Q9w3b3 drosophila Q9u898 manduca sex Q8icr6 plasmodium Q8xp49 clostridium Q3765 streptococc Q91zx9 arabidopsis Q812e8 vibrio harv Q92cg8 listeria in Q33759 streptococc Q33759 streptococc P73122 synechocyst
Q8i135 plasmodium
Q9u0h2 plasmodium
O33763 streptococc
Q8zd50 yersinia pe
                                                                                                                                                                          Description
```

0	0	0	0 8.	&	5 8.	5 8.	5 8.	1 8.	. 80	œ	.5	.5	.5 8.	.5 8.	8	.5 8.	6 0	&	.	60	80	5 8.	œ	5 8.	5 8.	8	83.5 8.8	.5 8.
			387	1588	. 1462	722	246	1964	1121	754	1798	1377	512	391	388	133	3896	1914	1878	1854	1853	688	475	450	441	757	745	133
						_		O					062095				_					o					10 Q9M105	.6 Q9K0D5
		staphyloco	Q8ypf9 anabaena sp	Q8xkx8 clostridium	Q8jvll feline infe	Q9u0h5 plasmodium	Q8y588 listeria mo	S	Q8tm44 methanosarc	12	Q9kz11 streptomyce	Q98qz8 mycoplasma	O62095 caenorhabdi		Q8h750 phytophthor	e2		ν				Q9uv05 neurospora	Q9cfi7 lactococcus	Q9pq49 ureaplasma	Q8rap3 thermoanaer		Q9m105 arabidopsis	Q9k0d5 neisseria m

ALIGNMENTS

Qу	Qу	Qy Db	Qu Be Ma	SQ	DR.	J RL	RT	RA	RP) X	88	S &	DE	DT	DT	DT.	ð t	RESULT Q8WSK7
117 DNCYVIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAA-GLPVRDVYTSDCL 170	60 EKNVEAWFMENNADTV-YQHTFEKATPDKMYGY-NKENAITYQTEDGQVLTDVLAFSD- 116 	1 DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDP-VWGNDFTCVGTAAQNLNED 59 : : : :	Query Match 25.1%; Score 239; DB 5; Length 209; Best Local Similarity 34.5%; Pred. No. 2.7e-13; Matches 61; Conservative 24; Mismatches 82; Indels 10; Gaps 7;	Pfam; PF02098; His_binding; 1. SEQUENCE 209 AA; 23889 MW; E5EB8BE710859591 CRC64;	InterPro; IPR002970; His_binding.	Submitted (DEC-1999) to the EMBL/GenBank/DDBJ databases.	blood-feeding ticks.";	Sangamnadech S., Paesen G.C., Nuttall P.A.;	SEQUENCE FROM N.A.	NCBI_TaxID=57047;	Parasitiformes; Ixodida; Ixodidae; Dermacentor.	Dermacentor reticulatus.	Serotonin and histamine binding protein.	(TrEMBLrel. 21,	(TrEMBLrel. 20,	01-MAR-2002 (TrEMBLrel. 20, Created)	QWWSK/ PRELIMINARY; PRT; 209 AA.	P

S

YTDVP

145

```
RESULT
Q8L2E8
ID Q8L2E8
AC Q8
AC Q8
DT 00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OCC CALLER RA ALLER R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local S
Matches 38
                                                                                                     OBL2E8
OBL2E8
OBL2E8
O1-OCT-2002 (TrEMBLre1
O1-OCT-2002 (TrEMBLre1
O1-MAR-2003 (TrEMBLre1
21nc metalloprotease P
Vibrio harveyi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-OCT-2000
01-OCT-2000
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hypothetical protein.

74C21_260 OR AT3650850.

Arabidopsis thaliana (Mouse-ear cress).

Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;

Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosida
eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q9LZX9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Submitted (DEC-2002) to the EMBL/GenBank/DDBJ databases. EMBL; AL162295; CAB82689.1; -. EMBL; BT002453; AA000813.1; -. Hypothetical protein. SEQUENCE 648 AA; 72914 MW; 83A3F7551172FC58 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Southwick A., Nguyen M., Tripp M., Palm C.J., Jones T., Wu T., Carninci P., Chen H., Cheuk R., Chan M.M., Chang C.H., Dale J.M., Deng J.M., Hayashizaki Y., Hsuan V.W., Lee J.M., Ishida J., Kamiya Kawai J., Kim C.J., Narusaka M., Onodera C.S., Quach H.L., Sakurai Satou M., Seki M., Shinn P., Tang C.C., Toroumi M., Wong C., Wu H.C Yamada K., Yu G., Yuan S., Shinozaki K., Ecker J., Theologis A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Choisne N., Robert C., Brottier P., Wincker P., C
Artiguenave F., Saurin W., Weissenbach J., Mewes
Lemcke K., Mayer K.F.X., Quetier F., Salanoubat M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                           Bacteria; Proteobacteria;
Vibrionaceae; Vibrio.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Davis R.W.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=3702;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Arabidopsis sequencing project; mitted (MAR-2000) to the EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LLQAP 1548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HINQWQDIVMGFHADGDLKHLGQKETIDRIKQVWTVGAKLYGIPESFIRVCVAA-----C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NVEAW--FMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RAVWKDRNEETAYLTAWKRIQD-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PVCNA--DSGSASRNKRRRFEYTESLDVPA 276
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              YVIYALGPDGSGAGYELWATDYT---DVPA 146
                                                                                                                                                                               (TrEMBLrel. 22,
(TrEMBLrel. 22,
(TrEMBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (TrEMBLrel. 15, Created)
(TrEMBLrel. 15, Last sequence update)
(TrEMBLrel. 23, Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                        PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9.28;
                                                                                                                                                Pap6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  to the
                                                                      Gammaproteobacteria; Vibrionales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     19;
                                                                                                                                                                           Created)
Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 88; DB
Pred. No. 23;
                                                                                                                                                                                                                                                                                                                                        PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 M1smatches
                                                                                                                                                                                                                                                                                                                                        677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       648
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KLTSRLDPATGNEFLCF - - - KNNSQQFVS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 10;
                                                                                                                                                                                                                                                                                                                                    ₹
                                                                                                                                                                               update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     69;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 648;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Cattolico L.,
s H.W., Rudd S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Wu H.C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Rosidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               . ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 6
```

```
Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RAP DR RT A DR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.

Teo J., Poh C.L., Zhang L.H.;

Teo J., Poh C.L., Zhang L.H.;

Tvibrio harveyi zinc metalloprotease.";

Submitted (MAY-2002) to the EMBL/GenBank/I

EMBL; AF508306; AAM34261.1; -.

InterPro; IPR001570; Peptidase_M4.

InterPro; IPR005075; Pep_M4_propep.

InterPro; IPR005075; Zn_MTpeptdse.

Pfam; PF01447; Peptidase_M4; 1.

Pfam; PF02868; Peptidase_M4; 1.

Pfam; PF03413; Pep_M4_propep; 1.

Pfam; PF03413; Pep_M4_propep; 1.

PRINTS; PR00730; THERMOLYSIN.

PROSITE; PS00142; ZINC_PROTEASE; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                     ListiList; LIN01204;
InterPro; IPR001899; (InterPro; IPR006192; InterPro; IPR001611; InterPro; IPR001611; InterPro; IPR001611; I
                                                                                                                                                                                  Glaser P., Frangeul L., Buchrieser C., Rusniok C., Amend A.,
Baquero F., Berche P., Bloecker H., Brandt P., Chakraborty T.,
Charbit A., Chetouani F., Couve E., de Daruvar A., Dehoux P.,
Domann E., Dominguez-Bernal G., Duchaud E., Durant L., Dussurg,
Entian K.-D., Fsihi H., Garcia-del Portillo F., Garrido P.,
Gautier L., Goebel W., Gomez-Lopez N., Hain T., Hauf J., Jacks,
Jones L.-M., Kaerst U., Kreft J., Kuhn M., Kunst F., Kurapkat (
Madueno E., Maitournam A., Mata Vicente J., Ng E., Nedjari H.,
Nordsiek G., Novella S., de Pablos B., Perez-Diaz J.-C., Purcel
Remmel B., Rose M., Schlueter T., Simoes N., Tierrez A.,
Vazquez-Boland J.-A., Voss H., Wehland J., Cossart P.;
"Comparative genomics of tistoria soccio."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-DEC-2001
01-DEC-2001
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 [1]
SEQUENCE
                                                                                                                          Vazquez-Boland J.-A., Voss H., Wel
"Comparative genomics of Listeria
Science 294:849-852(2001).
EMBL; AL596168; CAC96435.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A. STRAIN-CLIP 11262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q92CG8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Protease; Metalloprotease. SEQUENCE 677 AA; 75120 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Listeria innocua
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Hypothetical
LIN1204.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PubMed=11679669;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=1642;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           338
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 Similarity 21.7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KPVWADEAANGEHQDAWKHLQKLVEE-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DDNCYVIYALGPDGSGAGYELWATDYTDVPASCLEKF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VETINMNNQQWGGQVHRENC-----NVN-NYREINGAYAPMNDAHYEGQRVEDMYREWL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RPITLVDAKSGEIMDQWEGLAFLEAEGPGGNQKSGRYYFGPNTKFGGFQVDQYCQMNSDN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EQNSGLEYR---GMSGGMYE----SFSDVAAAALSQY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GARPIQQKLTMRVHYGSNYGNAFW----DGRQMTFGDGNSSMYPLATRDVIAHEVSHGFT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----EKATPDKMYGYNKENAITYQTEDGQVLT------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IKATYKNDPVWGND----FTCVGTAAQNLNEDEKNVEAWFMFMNNADTVYQHTF-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
Gram_pos_anchor;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Serovar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9.28;
                                                                        Gram_pos_anchor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1in1204
                                                  LPXTG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           19,
19,
23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 88;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5E904C0A127CA186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                          Simoes N., Tierrez A., hland J., Cossart P.; species.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Listeriaceae; Listeria
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1237
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ;00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CRC64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                   Dussurget
                                                                                                                                                                                                                                                             Purcell R.
                                                                                                                                                                                                                                                                                                                                   Jackson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DVLA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ----NYDL
                                                                                                                                                                                                                                                                                                          ດ
:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                   .
D
                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ·FS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              337
```

281

Š

83

142

121 222 69 166 20

```
RESULT OR RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT DRESULT IN RESULT I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
Matches 40
     Best Loc
Matches
                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QBXP49;
Q1-MAR-2002 (TrEMBLrel. 20, Created)
Q1-MAR-2002 (TrEMBLrel. 20, Last sequence update)
Q1-CCT-2002 (TrEMBLrel. 22, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q8ICR6;
Q8ICR6;
01-MAR-2003
01-MAR-2003
01-MAR-2003
                                                                                                                    Proc. Natl. Acad. Sci. U.S.,
EMBL; AP003185; BAB79822.1;
Hypothetical protein; Comple
SEQUENCE 386 AA; 44316 M
                                                                                                                                                                                                                                                           Shimizu T., Ohtani K., Hirakawa H., Ohshima K., Yamasl
Shiba T., Ogasawara N., Hattori M., Kuhara S., Hayash:
"Complete genome sequence of Clostridium perfringens,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Clostridium perfringens.
Bacteria; Firmicutes; Clostridia;
                                                                                                                                                                                                                                      flesh-eater."
                                                                                                                                                                                                                                                                                                                                            STKAIN=13 / Type A;
PubMed=11792842;
Shimi-
                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=1502;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q8XP49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Cherevach I., Davis P., Goodhead I., Stevens K., Mungall K., Berriman M., Pain A., Hall N., Atkin R., Chillingworth C., Do Ormond D., Sanders M., Hayes R., Hall S., Quail M., Barrell I Submitted (SEP-2002) to the EMBL/GenBank/DDBJ databases. EMBL; ALB44505; CAD50374.1; -. Hypothetical protein.

SEQUENCE 2017 AA; 244669 MW; 900CD398CDE14772 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Plasmodium falciparum
Eukaryota; Alveolata;
NCBI_TaxID=36329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Hypothetical protein.
MAL6P1.102.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        lostridium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            40;
     Similarity 49; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NCYVIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AWFMFMNNADTVYQHTFE----KATPDKMYGYNKENAITYQTEDGQVLTDV---LAFSDD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DENNEWQHNQNFISNNITYDTVNLHDNILNMCDDVVWGNKE - - INTHKENNNDDGNNNVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCYVIYALGPDGSGAGYELWATDYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RTSPDLMLSDTPSADIDSGTETGSIDTDYITVSDD-----FGISDDGSGSGFSSFSTDFT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3 (TrEMBLrel.
3 (TrEMBLrel.
3 (TrEMBLrel.
        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -YILLEDYKNALKNLF------ILKNNNYSSYDLIIDIYICICL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NNNDDDNNNNDDNNNNNCNNNNFYGYNKKDDYSLNNQFDNFMRHIYFNLAFT--
                                                                                                                       44316 MW;
                             9.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9.7%;
                                                                                                                                               Complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (isolate 3D7)
Apicomplexa;
                                                                                                                                                                                U.S.A. 99:996-1001(2002).
22.1; -.
                                                              .68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                23,
        33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26;
  Score 91; DB
Pred. No. 6.6;
33; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Created)
Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 92;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRT;
                                                                                                           proteome.
F06209C2465839D6 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Clostridiales; Clostridiaceae;
                             91;
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Haemosporida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2017
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 5;
                          DB
5-6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A
                                                           16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         67;
     70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 2017;
                                                                                                                                                                                                                                                                                            Hayashi
                                                           Length 386;
                                                                                                                                                                                                                                                                                                                          Yamashita
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Plasmodium
     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                 an
                                                                                                                                                                                                                                                                                            Ξ
                                                                                                                                                                                                                                                                                                                       Α.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Doggett
1 B.;
  82;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      40;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       614
Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    524
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            793
     9
                                                                                ρ
                                                                                                                                               밁
                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                 γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A CONTRACTOR OF THE CONTRACTOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT
033765
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ΩV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ωy
                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro; IPR005877; Gpos_YSIRK.
InterPro; IPR001899; Gram_pos_anchor.
InterPro; IPR001899; LPXTG.
InterPro; IPR006192; LPXTG.
InterPro; IPR006025; Zn_MTpeptdse.
Pfam; PF00746; Gram_pos_anchor; 1.
Pfam; PF04650; YSIRK_signal; 1.
TIGRFAMS; TIGR01168; YSIRK_signal; 1.
TIGRFAMS; TIGR01168; YSIRK_signal; 1.
PROSITE; PS01442; ZINC_PROTEASE; 1.
PROSITE; PS01442; ZINC_PROTEASE; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PROSITE; PS
PROSITE; PS
Cell wall;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-JAN-1998
01-JAN-1998
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    033765
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AN AMIDE BOND (BY SIM EMBL; Y13461; CAA73858.1; MEROPS; M26.001; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               proteases: evidence for recombination Infect. Immun. 66:181-190(1998).
-!- SUBCELLULAR LOCATION: ATTACHED TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Poulsen K., Reinholdt J., Jespersgaard C., Boye
Hauge M., Kilian M.;
"A comprehensive genetic study of streptococcal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Streptococcus.
NCBI_TaxID=1305;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Streptococcus sanguis. Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN-SK85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=98084472; PubMed=9423856;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           σ
                                1498
                                                                                                                                                                                                                                                                 1390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              107
                                                                                      91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  21
                                                                                                                                                                                                                                                                                                                                                                                51;
                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                           --GY---NKENAITY---QTEDGQVLTDVLAFSDDNCYVIYALGPDG--SGAGYELWATD 140
                                YMGYRMLDKDGAITYTHEMTHD----
                                                                                                                                                                                                                                                                                                                    DEAANGEHQDAWKHLQKLVEEN-----YD--
                                                                                                                                                                                                                                                              DRYRNNEHR-AGAELNKFVEDNAQETAKRQRDHYDYWYRILDEQGREKLYRNILLYDAYK
                                                                                                                                                                                                     NDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMF------MNNADTVYQHTFEKATPDKMY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IYSFTNENPSKFSGNIYDYPYDFIMPYSNSSYLSASDLSKYNKSTLALMRNEIY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IYALGPDG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VNKATVDFKNKNYTDCDSDLDLAT - - - KYGYNKENFSQYDDLQKKLNESKNSSSNDKVDN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TEKLSYYNSALKYSKNDDLLNSIYTTLKSD----SDFVDNSSILTNLNTSEKDNLMSKLY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LQKL------VEENYDLIKATY---KNDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DESCNNENTDNFKHSNTKKKILISIFTLVAFVIIGTSIYFLRSPLLYKYYYNSALKSSSV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DEAANGEHQDAWKH------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MNNADTVYQH-----TFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Hydrolase; Peptidoglycan-anchor; Protease. 1874 AA; 208478 MW; 4C0193C51CE7FD46 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8 (TrEMBLrel. 05, Cross (TrEMBLrel. 05, Lass (TrEMBLrel. 23, Lass (EC 3.4.24.13).
                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRELIMINARY;
                                                                                                                                            TTVGKATAEVQFDSSNPAMKYFFGPVGNKVVHNKHGAY-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                           9.5%;
27.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -SGAGYEL - - - WATDYTD - - - VPASCLEKFNEYAAGLPVRDVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Lactobacillales;
                                                                                                                                                                                                                                                                                                                                                                             14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Last
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Created)
                                                                                                                                                                                                                                                                                                                                                                                                              Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                      Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                           No.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  within and
                                                                                                                                                                                                                                                                                                                                                                                                              60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Streptococcaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                      DΒ
                             SDNEIY ---- LGGYGRRSGLGPEFFAKG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CELL
                                                                                                                                                                                                                                                                                                                                                                                                                                         2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            воуе
                                                                                                                                                                                                                                                                                                                                                                             48;
                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 1874;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WALL PEPTIDOGLYCAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ×.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   immunoglobulin Al
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        between
                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Brown, T.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     species.";
                                                                                                                                                                                                                                                                                                                                                                             72;
                                                                                                                                                                                                                                                                                                                       -LIKATYK
                                                                                                                                               -ATGDSVY
                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ВΥ
```

1448

37

1497 90 밁

```
RESULT OR RESULT OR RESULT OR RESULT OF RESULT OF RESULT OF RESULT OF RESULT OR RESULT OF RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SERVICE CONTRACTOR OF THE SERVICE CONTRACTOR CONTRACTOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q8IL35 PRELIMINARY; PRT.
Q8IL35;
Q1-MAR-2003 (TrEMBLrel. 23, Last of the control 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-FEB-1997
01-FEB-1997
01-MAR-2002
                                                                                                                                                                                                          Gardner M.J., Hail N., Fung E., White O., Berriman M., Hyman R.W., Carlton J.M., Pain A., Nelson K.E., Bowman S., Paulsen I.T., James K. Elsen J.A., Rutherford K., Salzberg S.L., Craig A., Kyes S., Chan M.-S., Nene V., Shallom S.J., Suh B., Peterson J., Angiuoli S., Pertea M., Allen J., Selengut J., Haft D., Mather M.W., Vaidya A.B., Martin D.M.A., Fairlamb A.H., Fraunholz M.J., Roos D.S., Ralph S.A., McFadden G.I., Cummings L.M., Subramanian G.M., Mungall C., Venter J.C., Carucci D.J., Hoffman S.L., Newbold C., Davis R.W., Fraser C.M., Barrell B.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Sequence analysis of the genome of the unicellular cyanobacterium Synechocystis sp. strain PCC6803. II. Sequence determination of the entire genome and assignment of potential protein-coding regions."; DNA Res. 3:109-136(1996).
EMBL; D90903; BAA17148.1; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.

MEDLING-97061201; PubMed-8905231;

Kaneko T., Sato S., Kotani H., Tanaka A., Asamizu E., N

Kaneko T., Sato S., Kotani H., Tanaka A., Asamizu E., N

Miyajima N., Hirosawa M., Sugiura M., Sasamoto S., Kinu

Miyajima N., Hirosawa M., Muraki A., Nakazaki N., Naruo

Hosouchi T., Matsuno A., Muraki A., Nakazaki N., Naruo
                                    "Genome sequence of the halciparum.";
falciparum.";
Nature 419:498-511(2002)
Nature 419:498-511(2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE-22255705; PubMed-12368864;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Plasmodium 
Eukaryota;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Shimpo S., Takeuchi C., Wada T., Tabata S.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacteria; Cyanobacteria;
NCBI_TaxID=1148;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Hypothetical SLR1920.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Hypothetical SEQUENCE 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Synechocystis sp.
Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        l Similarity
43; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DNLTYDKWQALVHALDETGVSLNLVNKHQEY - - - - PFREMFTFD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SGAGYELW-----ATDYTDVPASCLEKFNEYAAGLPVRDVYTSD 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PAIHQLLIRYFIPPVPDDMHQFDN---IELPPQFEKILTDVINFCDLN----YSL----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DTVYQ----HTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCYVIYALGPDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QKLYRESFNLQPGHLLVAIKDIRKKSIVSFKDY-----ADNLDK------FLEIFN-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QKLVEENYDL-----IKATYKNDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMFMNNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             falciparum
Alveolata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (TrEMBLrel. 02, Creat
(TrEMBLrel. 02, Last
(TrEMBLrel. 20, Last
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (strain PCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1; Complete 43031 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Apicomplexa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (isolate
                                                                                                                                                                              human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chroccoccales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 86.5; Di
Pred. No. 15;
24; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Created)
                                                                                                                                                                              malaria
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6803)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3D7)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              proteome.
6F4612A3BDDB17F3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Watanabe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Haemosporida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1898
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             368
                                                                                                                                                                          parasite Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Synechocystis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ₿
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .on update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Α.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ВB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JE., Name T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Nakamura
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Yasuda
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Okumura
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ...
:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         s.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          73
```

```
RESULT
Q9U0H2
                                                                                                                                                       RESULT
033763
 RRRRR COCCOGE DIT
                                                                                                                                                                                            밁
                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                   Ωy
                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                  L Submitted (FEB-1999) to the E EMBL; AL035475; CAB62891.1; - Hypothetical protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
Matches 31
                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                        Matches
                                                                                                          01-JAN-1998
01-JAN-1998
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-MAY-2000
01-MAY-2000
01-OCT-2002
MEDLINE-98084472; PubMed-9423856; Poulsen K., Reinholdt J., Jespers Hauge M., Kilian M.;
                                                                       Streptococcus sanguis Bacteria; Firmicutes;
                                                                                                                                                033763
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                           STRAIN-SK4
                                   SEQUENCE FROM
                                                    NCBI_TaxID=1305;
                                                              Streptococcus
                                                                                                 IgAl protease
                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        MAL4P2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q9U0H2
                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=36329;
                                                                                                                                                                15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             571
                                                                                                                                                                                             822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         628
                                                                                                                                                                                                                               762
                                                                                                                                                                                                                                                                   702
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               17
                                                                                                                                                                                                             99
                                                                                                                                                                                                                                                 60
                                                                                                                                                                                                                                                                                     13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                31;
                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                           TYOTEDGOVL-----TDVLAFSDDNCYVI 122
                                                                                                                                                                                                                                                                   DHVQMDKHSIAIINDNIDLINDNVGTSCDNVQFPIEKNDRVKDKFYENCDELFYENIQNV
                                                                                                                                                                                                                                                                               EHQDAWKHLQKLVEENYDLIKATY------KNDPVWGNDF-TCVGTAAQNLNED
                                                                                                                                                                                                                                                                                                                                                                                                          FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NSSY-YTFDTDTSENFISKYFYPRISYKKFSYDTFEGEKFDNLIL--GGMCYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DTVYQHTFEKATPDKM--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AWKNSSVLVEE---YCKSKYENKKDKLIIDNYDNSLFTHIYSNNHDSKEEQSNFFFHNNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AWKHLQKLVEENYDLIKATYKNDP---VWGNDFTCVGTAAQNLNEDEKNVEAWFMFMNNA
                                                                                                                                                                                            SYEGSEGVVIHKNKIKSDDDTFSLGMNENNCYII
                                                                                                                                                                                                                                DQNIYRKDFFFFNDYNNDHEIYCENFSRSIYEKSLRNEKEEKIKNDKLIELSDDIYSLKE
                                                                                                                                                                                                                                                 EKNV--EAWFMF--MNNADTVYQHTFEKATPDKMYGYNKENAI----
                                                                                                                                                                                                                                                                                                                                                                                                                                     falciparum
Alveolata;
                                                                                                 TrembLrel.
TrembLrel.
TrembLrel.
TrembLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                               (TrEMBLrel.) (TrEMBLrel.) (TrEMBLrel.) (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1898
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A,
                                                                                                                                                                                                                                                                                                               9.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9.08;
                                                                                                                                                                                                                                                                                                                                          229692 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     223829
                                                                                                 1. 05,
1. 05,
1. 23,
24.13)
                                                                                                                                                                                                                                                                                                                                                                                       Churcher
                                                                        Lactobacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                     Apicomplexa;
                                                                                                                                                                                                                                                                                                                                                                                                                                             (isolate
                                                                                                                                                                                                                                                                                                                                                                                                                                                               protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       13,
13,
22,
         Jespersgaard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21;
                                                                                                         Last
Last
                                                                                                                                                                                                                                                                                                        24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Created)
Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -YGYNK--ENAITYQTEDGQVLTDVLAFSDDNCYV
                                                                                                                                                                                                                                                                                                      Score 86; DB
Pred. No. 1.4e
24; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     XE:
                                                                                                                                                                                                                                                                                                                                                                     EMBL/GenBank/DDBJ
                                                                                                                             Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 86;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT;
                                                                                                                                               PRT;
                                                                                                                                                                                                                                                                                                                                                                                       c.,
                                                                                                                                                                                                                                                                                                                                                                                                                                             3D7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                           sequence update)
annotation updat
                                                                                                                                                                                                                                                                                                                                          38F6CEECA9B3253B CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7B5CB02A7091822F CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                    Haemosporida;
                                                                                                                                                                                                                                                                                                                                                                                       Harris
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1928
                                                                                                                                              1874
         <u>ر</u>
                                                                        Streptococcaceae;
                                                                                                                                                                                                                                                                                                               .4e+02;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .4e+02
                                                                                                                                               ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ₿
                                                                                                                                                                                                                                                                                                                                                                                       В.,
         воуе
                                                                                                          update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       update)
                                                                                                                                                                                                                                                                                                                                                                      databases
                                                                                                                                                                                                                                                                                                                                                                                       Harris
                                                                                                                                                                                                                                                                                                                        Length 1928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 1898
         ...
:
                                                                                                                                                                                                                                                                                                                                                                                                                                      Plasmodium
                                                                                                                                                                                                                                                                                                        Indels
         Brown
                                                                                                                                                                                                                                                                                                                                                                                       D.,
                                                                                                                                                                                                                                                                                                                                                                                        Lawson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                        .
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              627
                                                                                                                                                                                                                                                 98
                                                                                                                                                                                                                                                                   761
                                                                                                                                                                                                                                                                                     59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                73
```

```
δõ
                          밁
                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δĀ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SQ DR DR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                 Matches
                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                             InterPro; IPR005877; Gpos_YSIRK.
InterPro; IPR001899; Gram_pos_anchor.
InterPro; IPR001899; Gram_pos_anchor.
InterPro; IPR006192; LPXTG.
InterPro; IPR006025; Zn_MTpeptdse.
Pfam; PF04650; YSIRK_signal; 1.
Pfam; PF04650; YSIRK_signal; 1.
TIGRFAMS; TIGR01167; LPXTG_anchor; 1.
TIGRFAMS; TIGR01168; YSIRK_signal; 1.
PROSITE; PS50847; GRAM_POS_ANCHORING; 1.
PROSITE; PS00142; ZINC_PROTEASE; 1.
Cell wall; Hydrolase; Peptidoglycan-anchor.
Cell wall; Hydrolase; Peptidoglycan-anchor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               033764;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-JAN-1998 (TrEMBLrel. 05, C1
01-JAN-1998 (TrEMBLrel. 05, La
01-MAR-2003 (TrEMBLrel. 23, La
Igal protease (EC 3.4.24.13).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRINTS; PRO0019; LEURICHPT.
TIGREAMS; TIGRO1167; LPXTG-ANCHORING; 1.
PROSITE; PS50847; GRAM_POS_ANCHORING; 1.
Hypothetical protein; Complete proteome.
SEQUENCE 1237 AA; 137104 MW; FDF3655
                                                                                                                                                                                                                                                                                                                                       proteases: evidence for recombination within and between Infect. Immun. 66:181-190(1998).
-I- SUBCELLULAR LOCATION: ATTACHED TO THE CELL WALL PEPT.
                                                                                                                                                                                                                                                                                               MEROPS; M26.001
                                                                                                                                                                                                                                                                                                                  EMBL;
                                                                                                                                                                                                                                                                                                                                                                                            Poulsen K., Reinholdt J., Jespersgaard C., Hauge M., Kilian M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=1305;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Streptococcus sanguis.
                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=98084472; PubMed=9423856;
                                                                                                                                                                                                                                                                                                                                                                               "A comprehensive genetic study of streptococcal immunoglobulin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10
                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local
                                                                                                                                                                                                                                                                                                            AN AMIDE BOND (BY SIMILARITY).
L; Y13460; CAA73857.1; '-.
                           1370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               895
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      775
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PF00560; LRR; 4.
  38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          58
                                                      7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                            Similarity
NDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMF - - - - - - MNNADTVYQHTFEKATPDKMY
                          DRYRNNEHR-AGAELNKFVEDNAQETAKRQRDHYDYWYRILDEQGREKLYRNILLYDAYK 1428
                                                     DEAANGEHQDAWKHLQKLVEEN-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LSGNVDENYVTTA----KTFTGYEL----IETPSNAEGKFSENA 930
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LAFSDDNCYVIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYA 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SSAKEILGYTLTEMPSNAQGEFSLEEQTVTYIYSKNPVPAKDITVQYTDEDGMELAPTET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EDEKNYEAWFMFMNNADTVYQHTFEKATPDKMYGYN----KENAITYQTEDGQVL--TDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KYTVTLNVENLDGIKATPKEVIVYIDAVQGANITVKYEDESGNKLAENSILTGNVGEEYS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KHLQKLVEENYDLIKATYKN-----DPVWGNDFT----
                                                                                                                                    1854 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                         9.2%;
27.6%;
                                                                                                                                 ; Peptidoglycan-anchor; Protease. 205915 MW; 09AF960055C8EE30 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Lactobacillales;
                                                                               13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Last sequence up
                                                                              Score 88; DB Pred. No. 89; 3; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 88;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FDF36556017FB627 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1854
                                                                                                                                                                                                                                                                                                                                        THE CELL WALL PEPTIDOGLYCAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Streptococcaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ₽B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ä
                                                      -dy
                                                                                                                                                                                                                                                                                                                                                                                                        воуе
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     16;
                                                                                                        2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       update)
                                                                               49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          65;
                                                                                                       Length 1854;
                                                                                                                                                                                                                                                                                                                                                                                                        <u>۳</u>.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 1237;
                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                        Brown
                                                                                                                                                                                                                                                                                                                                                                species.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -- CVGTAAQNLN
                                                                              72;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          36;
                                                   -LIKATYK
                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                        ВУ
 90
                                                     37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 894
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     834
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               57
```

```
맑
                      Š
                                                 망
                                                                      Qy
                                                                                                 Вр
                                                                                                                       Qy
                                                                                                                                                   В
                                                                                                                                                                       Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Дb
                                                                                                                                                                                                   Query Match
Best Local S
Matches 51
                                                                                                                                                                                                                                                                         InterPro; IPR006025; Zn_MTpeptdse.
Pfam; PF00746; Gram_pos_anchor; 1.
Pfam; PF04650; YSIRK_signal; 1.
TIGRPAMS; TIGR01167; LPXTG_anchor; 1.
TIGRPAMS; TIGR01167; LPXTG_anchor; 1.
TIGRPAMS; TIGR011168; YSIRK_signal; 1.
PROSITE; PS50847; GRAM_DOS_ANGHORING;
PROSITE; PS00142; ZINC_PROTEASE; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                         "A comprehensive genetic study of streptococcal proteases: evidence for recombination within and Infect Immun. 66:181-190(1998).

- i - SUBCELLULAR LOCATION: ATTACHED TO THE CELL W
                                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                                               Cell wall;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Poulsen K., Reinhold
Hauge M., Kilian M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN-SK11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Streptococcus sanguis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-JAN-1998 (TrEMBLrel. 05, C: 01-JAN-1998 (TrEMBLrel. 05, L: 01-JAN-1998 (TrEMBLrel. 23, L: 01-MAR-2003 (TrEMBLrel. 23, L: 1gAl protease (EC 3.4.24.13).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 033759;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            033759
                                                                                                                                                                                                                                                                                                                                                                InterPro;
                                                                                                                                                                                                                                                                                                                                                                            InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                     MEROPS; M26.001
                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=98084472; PubMed=9423856;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NCBI_TaxID=1305;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                         InterPro; IPR005877; Gpos_YSIRK
                                                 1478
                                                                                                  1429
                                                                                                                                                                                                                                                                                                                                                                                                                  AN AMIDE BOND
1; Y13455; CAA7
1524 LLQAP 1528
                                                                                                                                                   1370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1524
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1429
                        141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  141
                                                                          91
                                                                                                                          38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   91
                                                                                                                                                                           7
                                                                                                                                                                                                                Similarity
                                                              --GY---NKENAITY---QTEDGQVLTDVLAFSDDNCYVIYALGPDG--SGAGYELWATD 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LLQAP 1528
                        YTDVP 145
                                                 YMGYRMLDKDGAITYTHEMTHD-
                                                                                                 ----FGDD-TTVGKATAEAQFDSSNPAMKYFFGPVGNKVVHNKHGAY
                                                                                                                         NDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMF-----MNNADTVYQHTFEKATPDKMY
                                                                                                                                                 DRYRNNEHR-AGAELNKFVEDNAQETAKRQRDHYDYWYRILDEQGREKLYRNILLYDAYK
                                                                                                                                                                          DEAANGEHQDAWKHLQKLVEEN-----YD--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           YMGYRMLDKDGAITYTHEMTHD----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 --GY---NKENAITY---QTEDGQVLTDVLAFSDDNCYVIYALGPDG--SGAGYELWATD 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  YTDVP 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ----FGDD-TTVGKATAEAQFDSSNPAMKYFFGPVGNKVVHNKHGAY-----ATGDSVY
                                                                                                                                                                                                                                                                                                                                                                IPR001899; Gram_pos_anchor
IPR006192; LPXTG.
                                                                                                                                                                                                                                            300142,
Hydrolase; Pepul
AA; 206031
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Reinholdt J.,
                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                  CAA73852.1;
                                                                                                                                                                                                                                                                                                                                                                                                                             (BY SIMILARITY).
                                                                                                                                                                                                              9.2%;
                                                                                                                                                                                                                                                   Peptidoglycan-anchor;
206031 MW; 0538AB0389
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Lactobacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Jespersgaard
                                                                                                                                                                                                 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Last
                                                                                                                                                                                                              Score 88;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Created)
                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sequence update)
                                                                                                                                                                                                                                                    0538AB0389968B58 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1854
                                                                                                                                                                                                                                                                                         ۲.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 within and
                                                                                                                                                                                                                                                                                                                                                                                                                                         THE CELL WALL PEPTIDOGLYCAN BY
                                                                                                                                                                                                                DB
89;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     С.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Streptococcaceae,
                                                 -SDNEIY----LGGYGRRSGLGPEFFAKG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -SDNEIY----LGGYGRRSGLGPEFFAKG
                                                                                                                                                                                                                           2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Воуе
                                                                                                                                                                                                                                                                 Protease
                                                                                                                                                                                                   49;
                                                                                                                                                                                                                           Length 1854;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ×.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               immunoglobulin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  between species.";
                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Brown
                                                                                                                                                                                                   72;
                                                                                                                                                                          -LIKATYK
                                                                                                 ATGDSVY
                                                                                                                                                                                                   Gaps
                                                 1523
                                                                                                                                                 1428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1523
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1477
                                                                                                                         90
                                                                                                                                                                          37
```

RESULT P73122

```
Search completed: August 1, 2003, 12:19:57 Job time: 51.4705 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                R InterPro; IPR005877; Gpos_YSIRK.
R InterPro; IPR001899; Gram_pos_anchor.
R InterPro; IPR006192; LPXTG.
R InterPro; IPR006192; LPXTG.
R InterPro; IPR006025; Zn_MTpeptdse.
R InterPro; IPR006025; Zn_MTpeptdse.
R Pfam; PF00746; Gram_pos_anchor; 1.
Pfam; PF00746; Gram_pos_anchor; 1.
R TIGRRAMS; TIGR01168; YSIRK_signal; 1.
R TIGRRAMS; TIGR01168; YSIRK_signal; 1.
R TIGRRAMS; TIGR01168; YSIRK_signal; 1.
R PROSITE; PS00147; GRAM_POS_ANCHORING; 1.
R PROSITE; PS00142; ZINC_PROTEASE; 1.
R PROSITE; PS00142; ZINC_PROTEASE; 1.
R PROSITE; PS00142; ZINC_PROTEASE; 1.
Cell wall; Hydrolase; Peptldoglycan-anchor; Protease.
Q SEQUENCE 1874 AA; 207888 MW; FA30684926BB4532 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match 8.9%; Score 85; DB 2; Length 1874; Best Local Similarity 27.6%; Pred. No. 1.7e+02; Matches 51; Conservative 13; Mismatches 49; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "A comprehensive genetic study of streptococcal immunoglobulin Al proteases: evidence for recombination within and between species."; Infect. Immun. 66:181-190(1998).
-I- SUBCELLULAR LOCATION: ATTACHED TO THE CELL WALL PEPTIDOGLYCAN BY AN AMIDE BOND (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; Y13459; CAA73856.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEROPS; M26.001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1544 LLQAP 1548
                                                                                                                                                                                                                                                                                      1498 YMGYRMLDKDGAITYTHEMTHD------SDNEIY----LGGYGRRSGLGPEFFAKG 1543
                                                                                                                                                                                                                                                                                                                                                                                                                                     1449 ----FGDDAT-VGKATAEAQFDSSNPAMKYFFGPVGNKVVHNRHGAY-----ATGDGVY 1497
                                                                                                                                                                                                                  141 YTDVP 145
                                                                                                                                                                                                                                                                                                                                                   91 --GY---NKENAITY---QTEDGQVLTDVLAFSDDNCYVIYALGPDG--SGAGYELWATD 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NDPVWGNDFTCVGTAAQNLNEDEKNVEAWFMF-----MNNADTVYQHTFEKATPDKMY 90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                72;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
```

ફ

밁 ð 밁 Ş 밁 5 THIS PAGE BLANK (USPTO)

ι

on:

```
Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Minimum DB seq
Maximum DB seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Scoring table:
                                                                                                                                                                                                                                                                                                                     Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                         331.5
331.5
267.5
267.5
83.5
                                                                                                                                                                                                                                             Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          length: 0
length: 2000000000
                                                                                                                                                                                                                                             Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-087-195-8
989
1 NPTWANEAKLGSYQDAWKSL.....EKTVRNVYTDSSCKPAPAQN 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     August 1, 2003, 12:15:58; Search time 18.0267 Seconds (without alignments) 1199.017 Million cell updates/sec
       100.0
33.5.0
27.0
8.4
7.5.5
7.5.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    451899 seqs, 118759770 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Published_Applications_AA: *
                                                                                                                                                                                                                                                                                                                                                                          :/cgn2_6/ptodata/1/pubpaa/US07_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/PCT_NEW_PUB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US07_NEW_PUB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US09_NEW_PUB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US08_NEW_PUB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US09A_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US09B_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US09E_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US09E_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US09E_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US09E_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US10E_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US10E_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US10E_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US10E_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US10E_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US10E_PUBCOMB.pep:*
:/cgn2_6/ptodata/1/pubpaa/US10E_PUBCOMB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GenCore version Copyright (c) 1993 - 2003
                                                                                                                                                                                                                                                Length DB
       182
171
171
172
172
172
177
778
221
221
198
199
199
199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gapext 0.5
       14
14
10
10
10
10
114
    4 US-10-085-572-8

4 US-10-087-195-8

4 US-10-085-572-7

4 US-10-085-572-6

4 US-10-085-572-6

4 US-10-085-572-6

6 US-09-815-242-10728

0 US-09-815-242-10728

0 US-09-95-542-9

0 US-09-95-542-9

0 US-09-95-731-72

US-09-801-731-8872

US-09-801-731-2

0 US-09-731-72-268

4 US-10-052-586-588
                                                                                                                                                                                                                                                H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5.1.6
Compugen Ltd
Sequence 8, Appli
Sequence 7, Appli
Sequence 7, Appli
Sequence 6, Appli
Sequence 6, Appli
Sequence 10728, A
Sequence 1728, A
Sequence 172, Appli
Sequence 172, App
Sequence 269, Appli
Sequence 588, App
Sequence 588, App
                                                                                                                                                                                                                                             Description
                                                                                                                                                                                                                                      Sequence 8, Application US/10085572

Publication No. US20020151499A1

GENERAL INFORMATION:
APPLICANT: Nutteal1, Patricia, Ann
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Conjunctivitis
FILE REFERENCE: 2488-1-003

CURRENT APPLICATION NUMBER: US/10/085,572

CURRENT FILING DATE: 2002-02-27

PRIOR APPLICATION NUMBER: PCT/GB00/03282

PRIOR APPLICATION NUMBER: 9920674.0

PRIOR APPLICATION NUMBER: 9920674.0

PRIOR FILING DATE: 1999-09-01

NUMBER OF SEQ ID NOS: 8

SOFTWARE: FastSEQ for Windows Version 4.0

SEQ ID NO 8

LENGTH: 182

TYPE: PRT

ORGANISM: MS-HBP 1
                                                                                        Š
                                                            В
                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 1
US-10-085-572-8
                                                                                                                                                                                Query Match
Best Local Sim
Matches 182;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121 VIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKPAPA
                                                            61 NATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCD
                                                                                                                                                                                     al Similarity
182; Conser
                                                                                                                        VIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKPAPA
                                                                                                                                                                                100.0%; Score 989; DB 14; llarity 100.0%; Pred. No. 3.7e-99; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-176-758-588
US-10-175-737-588
US-10-175-737-588
US-10-175-752-588
US-10-176-482-588
US-10-176-482-588
US-10-176-913-588
US-10-176-913-588
US-10-176-913-588
US-10-174-572-588
US-10-174-572-588
US-10-174-572-588
US-10-174-579-588
US-10-174-579-588
US-10-174-579-588
US-10-174-579-588
US-10-176-739-588
US-10-176-492-588
US-10-176-492-588
US-10-176-93-588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ALIGNMENTS
                                                                                                                                                                                     Indels
                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
Sequence
Sequence
Sequence
```

Result

0;

0

```
; LENGTH: 171
; TYPE: PRT
; ORGANISM: FS-HBP 2
US-10-085-572-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; LENGTH: 182
; TYPE: PRT
; ORGANISM: MS-HBP 1
US-10-087-195-8
                                                                                                                                                                                                                                                                                                                                                                                       US-10-085-572-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 2
US-10-087-195-8
                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                               Sequence 7, Application US/10085572 Publication No. US20020151499A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 8, Application US/10087195 Publication No. US20020193306A1 GENERAL INFORMATION:
                                                                           SEQ ID NO 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches 182; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQ ID NO 8
                                                                                                                               PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR FILING DATE: 2000-08-24
PRIOR APPLICATION NUMBER: 9920674.0
PRIOR FILING DATE: 1999-09-01
                                                                                                                                                                                                           CURRENT APPLICATION NUMBER: US/10/085,572
CURRENT FILING DATE: 2002-02-27
                                                                                                                                                                                                                                                 APPLICANT: Nuttall, Patricia, Ann
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Conjunctivitis
FILE REFERENCE: 2488-1-003
                                                                                           SOFTWARE: FastSEQ for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR FILING DATE: 1999-09-01
NUMBER OF SEQ ID NOS: 8
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILE REFERENCE: 2488-1-004
CURRENT APPLICATION NUMBER: US/10/087,195
CURRENT FILING DATE: 2002-03-01
                                                                                                               NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION NUMBER: PCT/GB00/03287 PRIOR FILING DATE: 2000-08-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Nuttall, APPLICANT: Paesen,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION NUMBER: 9920673.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PPLICANT: Nuttall, Patricia, Anne
PPLICANT: Paesen, Guido, Christiaan
ITLE OF INVENTION: Treatment of Allergic Rhinitis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181 QN
181 QN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121 VIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTWAYFAQQQEKTVRNVYTDSSCKPAPA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 NATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETOGTRTQTFEDVFVFSDYKNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 NATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QN 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QN 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKPAPA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKL 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       182
                                                                                           Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 989; DB 14,
Pred. No. 3.7e-99;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 182;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
```

```
Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH: 171
; TYPE: PRT
; ORGANISM: FS-HBP 2
US-10-087-195-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 4
US-10-087-195-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                      US-10-085-572-6
                                                                                                                                                                                                                       Sequence 6, Application US/10085572 Publication No. US20020151499A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQ ID NO 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 7, Application US/10087195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Publication No. US20020193306A1
                                                         CURRENT APPLICATION NUMBER: US/10/085,572
CURRENT FILING DATE: 2002-02-27
PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR FILING DATE: 2000-08-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                          APPLICANT: Nuttall, Patricia, Ann
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Conjunctivitis
FILE REFERENCE: 2488-1-003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Allergic Rhinitis
FILE REFERENCE 2488-1-04
CURRENT APPLICATION NUMBER: US/10/087,195
CURRENT FILING DATE: 2002-03-01
PRIOR APPLICATION NUMBER: PCT/GB00/03287
PRIOR FILING DATE: 2000-08-24
PRIOR APPLICATION NUMBER: 9930673.2
PRIOR APPLICATION NUMBER: 9920674.0 PRIOR FILING DATE: 1999-09-01 NUMBER OF SEQ ID NOS: 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Nuttall, APPLICANT: Paesen,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: FastSEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR FILING DATE: 1999-09-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local
                                                                                                                                                                                                                                                                                                                                                                     120 DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC 169
                                                                                                                                                                                                                                                                                                                                                                                                              120 DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120 DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                        63 IQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETED--GQVFTDVIAYSD-DNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            60 LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              63 IQAEFLEMNNADTNMQFATEKVTAVKMYGYNRENAFRYETED - - GQVFTDVIAYSD - DNC 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      74;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2 PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKS 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKS 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Patricia, Anne
Guido, Christiaan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     33.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             33.5%; Score 331.5;
42.0%; Pred. No. 5.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 331.5; DB 1
Pred. No. 5.3e-28;
9; Mismatches 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .3e-28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                        : 119
```

SEQ ID NO 6

SOFTWARE: FastSEQ for Windows Version 4.0

```
US-09-815-242-10728
                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                           á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; TYPE: PRT; ORGANISM: FS-HBP1
US-10-087-195-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 6
US-10-087-195-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; LENGTH: 172
; TYPE: PRT
; ORGANISM: FS-HBP1
US-10-085-572-6
                                                                                          GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 6, Application US/10087195 Publication No. US20020193306A1 GENERAL INFORMATION:
                                                                                                            Sequence 10728, Application US/09815242 Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQ ID NO 6
LENGTH: 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
APPLICANT: Haselbeck, Robert APPLICANT: Ohlsen, Kari L. APPLICANT: Zyskind, Judith W. APPLICANT: Wall, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Nuttall, Patricia, Anne
APPLICANT: Paesen, Guido, Christian
TITLE OF INVENTION: Treatment of Allergic Rhinitis
FILE REFERENCE: 2468-1-004
CURRENT APPLICATION NUMBER: U$\frac{10}{087},195
CURRENT FILING DATE: 2002-03-01
PRIOR APPLICATION NUMBER: PCT/GB00/03287
PRIOR FILING DATE: 2000-08-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION NUMBER: 9920673.2
PRIOR FILING DATE: 1999-09-01
NUMBER OF SEQ ID NOS: 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local
                                                                                                                                                                                                                                                                                        120
                                                                                                                                                                                                                                         120 YVIYALGPDGSGAG-YELWAT-DYTDVPASCLEKFNEYAA---GLPVRDVYT-SDCLP 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120 DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60 LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC 119
                                                                                                                                                                                                                                                                                                                                                                        60 LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC 119
                                                                                                                                                                                                                                                                                                                                                                                                                       w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ch 27.0%; Score 267.5; DB 14; Length 172;
l Similarity 39.3%; Pred. No. 4.5e-21;
70; Conservative 20; Mismatches 77; Indels 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2 PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      70; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      YVIYALGPDGSGAG-YELWAT-DYTDVPASCLEKFNEYAA---GLPVRDVYT-SDCLP 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED--GQVLTDVLAFSD-DNC 119
                                                                                                                                                                                                                                                                                  DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP 177
                                                                                                                                                                                                                                                                                                                                 VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED--GQVLTDVLAFSD-DNC 119
                                                                                                                                                                                                                                                                                                                                                                                                            PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                         PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          27.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               score 267.5; DB 14; Length
pred. No. 4.5e-21;
formatches 77; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-728-914-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; ORGANISM: Enterococcus faecalis US-09-815-242-10728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: 60/207,727
PRIOR FILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR FILING DATE: 2000-10-23
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/257,931
                                                               SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 4
LENGTH: 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: FastSEQ for Windows Version SEQ ID NO 10728 LENGTH: 778
                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
APPLICANT: KANTOR, FRED S.
APPLICANT: FIKRIG, EROL
APPLICANT: DAS, SUBRATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 4, Application US/09728914
Patent No. US20010046499A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
TYPE: PRT ORGANISM: Ixodes scapularis -09-728-914-4
                                                                                                                                                            CURRENT APPLICATION NUMBER: US/09/728,914
CURRENT FILING DATE: 2000-12-01
PRIOR APPLICATION NUMBER: 60/169,048
PRIOR FILING DATE: 1999-12-03
PRIOR APPLICATION NUMBER: 60/240,716
PRIOR FILING DATE: 2000-10-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CURRENT APPLICATION NUMBER: US/09/815, CURRENT FILING DATE: 2001-03-21 PRIOR APPLICATION NUMBER: 60/191,078 PRIOR FILING DATE: 2000-03-21 PRIOR APPLICATION NUMBER: 60/206,848 PRIOR FILING DATE: 2000-05-23 PRIOR FILING DATE: 2000-05-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                        TITLE OF INVENTION: TICK ANTIGENS AND COMPOSITIONS AND METHODS COMPRISING TITLE OF INVENTION: THEM FILE REFERENCE: YU-107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION NUMBER: 60/269,308 PRIOR FILING DATE: 2001-02-16 NUMBER OF SEQ ID NOS: 14110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR FILING DATE: 2000-12-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE OF INVENTION: Identification of Essential Genes
                                                                                                                                           NUMBER OF SEQ ID NOS: 39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILE REFERENCE: ELITRA.011A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   270 SKAEYEKAKATPIDEGLVPLKASDDN-RKVVD--NYVKEVINEVKAKTGKNVYTD 321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 122 IFVPKERGS----DEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTD 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                219 GKHLSELDLPQTALLAGMPQAPNSYDPYT-----KPDTAKER-----RDVVLYTMYDNKKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          176 QEAWMAVRLEREKSKEEILTYYI-NKVYMANGFYGME----TAAEN-----YY 218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            68 NKHLTDLKESHETITVW-----KAYD-YTTENGIKYETQGTRTQTFEDVFVFSDYKNCDV 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14 QDAWKSLQQDQNK-----RYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATILYK 67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Carr, Grant J.
Yamamoto, Robert T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Xu, H. Howard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Trawick, John
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; Score 83.5; D
; Pred. No. 3.1;
25; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 778;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     45;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
```

```
RESULT 10
US-09-893-737-172
                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                         δõ
                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                      ; NAME/REY: UNSURE
; LOCATION: (115)
; OTHER INFORMATION: amino acid at this position is unknown
US-09-995-542-9
                                                                                                                                                                               밁
                                                                                                                                                                                                  δõ
                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                            Sequence 172, Application US/09893737 Patent No. US20020110855A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
          APPLICANT: Sheppard, Paul O.
APPLICANT: Presnell, Scott R.
TITLE OF INVENTION: MAMMALIAN SECRETED PROTEINS
FILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CURRENT APPLICATION NUMBER: US/09/995,542
CURRENT FILING DATE: 2001-11-28
PRIOR APPLICATION NUMBER: 60/253,520
PRIOR FILING DATE: 2000-11-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 9, Application US/09995542 Patent No. US20020127647A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -09-995-542-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS:
SOFTWARE: PatentIn Ver
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE OF INVENTION: ATP-Binding Cassette Transporter-Like Molecules and TITLE OF INVENTION: Uses Thereof FILE REFERENCE: 00-658-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Shutter, John APPLICANT: Ulias, Laarn:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH: 2201
TYPE: PRT
ORGANISM: Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ID NO 9
                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                                          154
                                                                                                                                                                                                                                            349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              145
                                                                                                                                                                                                                                                                                                                                    61 NATILYKNKHLTDLKESHETITVWKAYDYTTENGIKY -- ETQGTR-----TQTFEDVFV 112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      29 YLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATILYKNKHLTDLKESHETITV-WKAY
                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                    NSTTPYCNDLMKNLESSPLSRIIWKALKPLLVGKILYTPDTPATRQVMAEVNKTFQELAV
                                                                                                                                                                            IMAFLAKNPEDVQSPNGSVYT 423
                                                                                                                                                                                                          TMAYFAQQQEKTVR---NVYT 171
                                                                                                                                                                                                                                       FHDLEGMWEELSPQIWTFMENSQEMDLVRTLLDSRGND----QFW--EQKLDGLDWTAQD 402
                                                                                                                                                                                                                                                                         FSDYKNCDVIFVPK----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EYCNTTQIY 212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DCCKFTMAY 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FORTPIGIATUNLVLYSNYVNCTVLRIP-FTNQGERHCDLWMANLTLSQETPDDCLNKFF 203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DVTDFSGNPVQCENFRVMEKRTPTNYSFQYRYKSKNSWETIDETLILKDIGEHGFPNVMN 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        YGSTGTTTRPGTRGARMIVTTAPPEEDPSK-----YKEQNATRVVEMNATQWVKWRTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----FSDYKNCDVIFVPKERGSDEGDYELWVS-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ulias, Laarni
                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ver.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      18.0%;
                                                                                                                                                                                                                                                                                                                                                                                        24.18;
                                                                                                                                                                                                                                                                                                                                                                                       Score 76; DB
Pred. No. 85;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 79;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      79; DB 9
No. 1.7;
                                                                                                                                                                                                                                                                         ---ERGSDEGDYELWVSEDKIDKIPDCCKF 153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                                                                                                                                      10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61;
                                                                                                                                                                                                                                                                                                                                                                      50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 221
                                                                                                                                                                                                                                                                                                                                                                                                    Length 2201;
                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                      36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -EDKIDKIP 148
                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          112
```

```
Query Match
Best Local Similarity
Vatches 33; Conserve
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-864-761-48672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; ORGANISM: Homo sapiens US-09-893-737-172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE: FastSEQ for Windows Version 3.0 SEQ ID NO 172 LENGTH: 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 48672, Application US/09864761 Patent No. US20020048763A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILE REFERENCE: Aeomica-x-1
CURRENT APPLICATION NUMBER: US/09/864,761
CURRENT FILING DATE: 2001-05-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CURRENT APPLICATION NUMBER: US/09/893,737
CURRENT FILING DATE: 2001-66-28
PRIOR APPLICATION NUMBER: US 60/215,446
PRIOR FILING DATE: 2000-06-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR APPLICATION NUMBER: US 60/207,456 PRIOR FILING DATE: 2000-05-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRIOR APPLICATION NUMBER: US 60/180,312 PRIOR FILING DATE: 2000-02-04
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION: HUMAN GENOME-DERIVED SINGLE EXON NUCLEIC ACID PROBES USEFUL FO TITLE OF INVENTION: GENE EXPRESSION ANALYSIS BY MICROARRAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQ ID NOS: 329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: PRT
                                         APPLICATION NUMBER: PCT/US01/00662 FILING DATE: 2001-01-30
                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: US 60/236,359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: US 09/632,366 FILING DATE: 2000-08-03
                                                                                                           APPLICATION NUMBER: PCT/US01/00663
                                                                                                                                                                                 FILING DATE:
                                                                                                                                                                                                 APPLICATION NUMBER: PCT/US01/00665
                                                                                                                                                                                                                                                                  APPLICATION NUMBER: PCT/US01/00664 FILING DATE: 2001-01-30
                                                                                                                                                                                                                                                                                                               FILING DATE: 2001-01-30
                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: PCT/US01/00667
                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: PCT/US01/00666 FILING DATE: 2001-01-30
                                                                                                                                                                                                                                                                                                                                                                                                          FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: GB 24263.6
                    APPLICATION NUMBER: PCT/US01/00661
                                                                                                                                                       APPLICATION NUMBER: PCT/US01/00668
                                                                                                                                                                                                                                             APPLICATION NUMBER: PCT/US01/00669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   138 WVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCK 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         104 W---RKVSEANGSCKWS-NNFIRSSTEVMRRVHRAPSCK 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  75 LLTFRSLHYNDPKG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         81 ITVWKAYDYTTENGIKYETQGTRTQTFEDYFVFSDYKNCDVIFVPKERGSDE---GDYEL 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   15 LAEASESTMKIIKEEFTDEEMQYDMAKSGQEKQTIEILMNPILLVKNTSLSMSKDDMSST 74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30 LAQATQTTDGVWGEEFTCVSVTAE--KIGKKK-----LNATILYKNKHLTDLKES-HET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Hanzel, Daviden, Wensheng
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Rank, David R.
Hanzel, David K.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                      2001-01-30
                                                                                                                                                                                                                      2001-01-30
2001-01-30
                                                                                                                                  2001-01-30
                                                                                                                                                                              2001-01-30
                                                                                                                                                                                                                                                                                                                                                                                                       2000-09-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              7.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 74.5;
Pred. No. 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 142;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -NSSGNDKECCNDMTV 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
```

```
õ
                                                                                                                                               밁
                                                                                                                                                                         õ
                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                               ; LENGTH: 199
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-801-231-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
RESULT 13
US-09-731-872-269
                                                                        밁
                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-864-761-48672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-801-231-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 2, Application US/09801231
PATENT NO. US20010049434A1
GENERAL INFORMATION:
APPLICANT: CONKLIN, Darrell C.
TITLE OF INVENTION: Human Ribonuclease
FILE REFERENCE: 00-19
                                                                                                                                                                                                                                                                                                                                                                                                                    CURRENT APPLICATION NUMBER: US/09/801,231
CURRENT FILING DATE: 2001-03-07
NUMBER OF SEQ ID NOS: 4
SOFTWARE: FastSEQ for Windows Version 3.0
SEQ ID NO 2
LENGTH: 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRIOR FILING DATE: 2001-01-29
NUMBER OF SEQ ID NOS: 49117
SOFTWARE: Annomax Sequence Listing Engine vers.
SEQ ID NO 48672
                                                                                                                                                                                                                                                                                                             Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local :
                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR APPLICATION NUMBER: US 60/234,687
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR FILING DATE: 2000-09-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  OTHER INFORMATION: MAP TO AC010766.2
OTHER INFORMATION: EXPRESSED IN PLACENTA, SIGNAL = 1.2
OTHER INFORMATION: EST_HUMAN HIT: AW188146.1, EVALUE 1.00e-77
OTHER INFORMATION: SWISSPROT HIT: P00673, EVALUE 1.00e-05
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ENGTH: 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: US 09/608,408 FILING DATE: 2000-06-30 APPLICATION NUMBER: US 09/774,203
                                                                          104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14
                                                                                                                                                                                                                     15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               81
                                                                                                                                                                                                                                                        30 LAQATQTTDGVWGEEFTCVSVTAE--KIGKKK-----LNATILYKNKHLTDLKES-HET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        30 LAQATQTTDGVWGEEFTCVSVTAE--KIGKKK-----LNATILYKNKHLTDLKES-HET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            n 7.5%;
Similarity 20.8%;
33; Conservative 7
                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LLTFRSLHYNDPKG------102
                                                                          W---RKVSEANGSCKWS-NNFIRSSTEVMRRVHRAPSCK 138
                                                                                                                                                                             ITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSDE---GDYEL 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      W---RKVSEANGSCKWS-NNFIRSSTEVMRRVHRAPSCK 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSDE----GDYEL 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LAEASESTMKIIKEEFTDEEMQYDMAKSGQEKQTIEILMNPILLVKNTSLSMSKDDMSST
                                                                                                          WVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCK 176
                                                                                                                                               LLTFRSLHYNDPKG------
                                                                                                                                                                                                                   LAEASESTMKIIKEEFTDEEMQYDMAKSGQEKQTIEILMNPILLVKNTSLSMSKDDMSST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCK 176
                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                             7.5%;
                                                                                                                                                                                                                                                                                      28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          28; Mismatches
                                                                                                                                                                                                                                                                                                             Score 74.5; D
Pred. No. 4.4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 74.5; DB 9;
Pred. No. 4.4;
                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 198;
                                                                                                                                                                                                                                                                                                                              Length 199;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                            Indels 47;
                                                                                                                                               -NSSGNDKECCNDMTV 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                        80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          80
                                                                                                                                                                                                                   74
```

```
ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 14
US-10-052-586-588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; NAME/KEY: SIGNAL ; LOCATION: -16..-1 US-09-731-872-269
PRIOR APPLICATION NUMBER: 60/059263
PRIOR FILING DATE: 1997-09-18
PRIOR APPLICATION NUMBER: 60/059266
PRIOR FILING DATE: 1997-09-18
PRIOR APPLICATION NUMBER: 60/062250
PRIOR FILING DATE: 1997-10-17
PRIOR APPLICATION NUMBER: 60/063120
PRIOR FILING DATE: 1997-10-24
PRIOR APPLICATION NUMBER: 60/063121
PRIOR APPLICATION NUMBER: 60/063121
PRIOR APPLICATION NUMBER: 60/063121
PRIOR FILING DATE: 1997-10-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOFTWARE: Pat
SEQ ID NO 269
LENGTH: 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 588, A Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 269, Application US/09731872 Patent No. US20020102604A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                         APPLICANT: Zhang,Zemin
TITLE OF INVENTION: SECRETED AND TRANSMEMBRANE POLYPEPTIDES AND NUCLEIC
TITLE OF INVENTION: ACIDS ENCODING THE SAME
FILE REFERENCE: P3430R1C1
CURRENT APPLICATION NUMBER: US/10/052,586
CURRENT FILING DATE: 2002-01-15
                                                                                                                                                                                                                                                                                                                                           APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER: US 60/169,629
PRIOR FILING DATE: 1999-12-08
PRIOR APPLICATION NUMBER: US 60/187,470
PRIOR FILING DATE: 2000-3-06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Dumas Milne Edwards, Jean Baptiste
APPLICANT: Bougueleret, Lydde
APPLICANT: Bougueleret, Eydde
APPLICANT: JObert, Severin
TITLE OF INVENTION: FULL-LENGTH HUMAN CDNAS ENCODING POTENTIALLY SECRETED PROTEINS
FILE REFERENCE: 78.US3.REG
CURRENT EPPLICATION NUMBER: US/09/731,872
CURRENT FILING DATE: 2000-12-07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NUMBER OF SEQ ID NOS: 482
                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   138 WVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCK 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                30 LAQATQTTDGVWGEEFTCVSVTAE--KIGKKK------LNATILYKNKHLTDLKES-HET 80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            15 LAEASESTMKIIKEEFTDEEMQYDMAKSGQEKQTIEILMNPILLVKNTSLSMSKDDMSST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Patent.pm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           W---RKVSEANGSCKWS-NNFIRSSTEVMRRVHRAPSCK 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LLTFRSLHYNDPKG-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ITVWKAYDYTTENGIKYETOGTRTOTFEDVFVFSDYKNCDVIFVPKERGSDE----GDYEL 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Baker, Kevin P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gurney, Austin L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Godowski, Paul J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Desnoyers, Luc
                                                                                                                                                                                                                                                                                                                                                                  Wood, William I.
                                                                                                                                                                                                                                                                                                                                                                                          Watanabe, Colin K.
                                                                                                                                                                                                                                                                                                                                                                                                           Smith, Victoria
                                                                                                                                                                                                                                                                                                                                                                                                                                     Pan, James
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Application US/10052586
b. US20020127584A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  7.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 74.5; D
Pred. No. 4.4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -----NSSGNDKECCNDMTV 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels 47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            74
```

DR APPLICATION NUMBER: 60/063486
DR FILING DATE: 1997-10-21
DR APPLICATION NUMBER: 60/063540
DR FILING DATE: 1997-10-28
DR APPLICATION NUMBER: 60/063541
DR FILING DATE: 1997-10-28
DR APPLICATION NUMBER: 60/063544

					*											
					•											
					** ** ** ** ** ** ** ** ** ** ** ** **											
RIO	PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR	PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR	PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR	PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR PRIOR	PRIOR	PRIOR										
PLICATI LING DA PLICATI LING DA	DATE	LING PLICA PLICA PLICA	APPLICATION FILING DATE APPLICATION FILING DATE APPLICATION FILING DATE APPLICATION FILING DATE APPLICATION APPLICATION APPLICATION APPLICATION APPLICATION APPLICATION	PLIC PLIC PLIC PLIC PLIC PLIC PLIC PLIC	LING C PLICAT PLICAT PLICAT PLICAT PLICAT PLICAT PLICAT PLICAT PLICAT PLICAT PLICAT	NG PI CAJI										
mżnż																
ER:	1998-06-1 1998-06-1 NUMBER: 60 1998-06-1 NUMBER: 60	ER: 6 8-06- 8-06- 8-06- 8-06-	NUMBER: 60 1998-06-0 1998-06-0 1998-06-0 NUMBER: 60 1998-06-0 NUMBER: 60 NUMBER: 60 NUMBER: 66-0 NUMBER: 66-0	0,0,0,0,0,0,0,0	, , , , , , , , , , , , , , , , , , , ,	0										
	000/22	708821 708832 708855	0/088029 04 0/088033 0/088167 0/088202 0/088202	0/087208 28 0/087609 02 0/087759 02 0/087827 0/088025 0/088025	0,085580 0,085582 0,085582 1,085700 0,085700 0,086700 0,086392 2,086392 2,086392 2,086392 2,086392	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9										
•			•													

OR APPLICATION NUMBER: 60/063564
OR APPLICATION NUMBER: 60/063564
OR APPLICATION NUMBER: 60/063734
OR FILING DATE: 1997-10-29
OR APPLICATION NUMBER: 60/063870
OR FILING DATE: 1997-10-31
OR APPLICATION NUMBER: 60/064103
OR FILING DATE: 1997-11-31
OR APPLICATION NUMBER: 60/066120
OR FILING DATE: 1997-11-24
OR APPLICATION NUMBER: 60/066120
OR FILING DATE: 1997-11-24
OR APPLICATION NUMBER: 60/06933
OR FILING DATE: 1997-11-24
OR APPLICATION NUMBER: 60/06935
OR FILING DATE: 1997-12-11
OR APPLICATION NUMBER: 60/06935
OR FILING DATE: 1997-12-12
OR APPLICATION NUMBER: 60/069870
OR APPLICATION NUMBER: 60/069870
OR APPLICATION NUMBER: 60/069870
OR APPLICATION NUMBER: 60/069070
OR APPLICATION NUMBER: 60/069070
OR APPLICATION NUMBER: 60/077450
OR APPLICATION NUMBER: 60/077632
OR APPLICATION NUMBER: 60/077632
OR APPLICATION NUMBER: 60/077632
OR APPLICATION NUMBER: 60/077632
OR APPLICATION NUMBER: 60/079664
OR FILING DATE: 1998-03-11
OR APPLICATION NUMBER: 60/079664
OR APPLICATION NUMBER: 60/080107
OR APPLICATION NUMBER: 60/080327
OR APPLICATION NUMBER: 60/080327
OR APPLICATION NUMBER: 60/081049
OR APPLICATION NUMBER: 60/080327
OR APPLICATION NUMBER: 60/08033
OR FILING DATE: 1998-04-01
OR APPLICATION NUMBER: 60/082569
OR APPLICATION NUMBER: 60/08256

APPLICATION NUMBER: 60/088861 FILING DATE: 1998-06-11

APPLICATION NUMBER: 60/1 FILING DATE: 1998-06-10

60/088826

APPLICATION NUMBER: 60/088825 FILING DATE: 1998-06-10

```
Ś
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ş
                                       ; ORGANISM: Homo Saplen US-10-174-590-588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Simi
Matches 33;
                                                                            Prior application removed - See File Wrapper or Palm NUMBER OF SEQ ID NOS: 612
SEQ ID NO 588
LENGTH: 199
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 588, A Publication No.
Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                APPLICANT:
                                                                                                                                                                                      CURRENT APPLICATION NUMBER: US/10/174,590 CURRENT FILING DATE: 2002-06-18
                                                                                                                                                                                                                           TITLE OF INVENTION: SECRETED AND TRANSMEMBRANE POLYPEPTIDES AND NUCLEIC TITLE OF INVENTION: ACIDS ENCODING THE SAME FILE REFERENCE: P3430R1C42
                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                                                                                                                                                                                                                                                                                  APPLICANT:
                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10-174-590-588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DR APPLICATION NUMBER: 60/088876
DR FILLING DATE: 1998-06-11
PR APPLICATION NUMBER: 60/089090
DR FILLING DATE: 1998-06-12
PR APPLICATION NUMBER: 60/089105
PR FILLING DATE: 1998-06-16
PR APPLICATION NUMBER: 60/089514
DR FILLING DATE: 1998-06-16
DR APPLICATION NUMBER: 60/089598
DR FILLING DATE: 1998-06-17
DR APPLICATION NUMBER: 60/089598
DR FILLING DATE: 1998-06-17
DR APPLICATION NUMBER: 60/089598
DR FILLING DATE: 1998-06-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: 60/089653
FILING DATE: 1998-06-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: 60/089908
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER: 60/088863 FILING DATE: 1998-06-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             104 W---RKVSEANGSCKWS-NNFIRSSTEVMRRVHRAPSCK 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     30 LAQATQTTDGVWGEEFTCVSVTAE--KIGKKK-----LNATILYKNKHLTDLKES-HET 80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             h 7.5%; Score 74.5; DB 14; Length 199;
Similarity 20.8%; Pred. No. 4.4;
33; Conservative 28; Mismatches 51; Indels 47
                                                                                                                                                                                                                                                                                                                                                                                           Goddard, Audrey
Godowski, Paul J.
Gurney, Austin L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCK 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LLTFRSLHYNDPKG-----------NSSGNDKECCNDMTV 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSDE---GDYEL 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LAEASESTMKIIKEEFTDEEMQYDMAKSGQEKQTIEILMNPILLVKNTSLSMSKDDMSST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Baker, Kevin P.
                                                                                                                                                                                                                                                                                             Zhang, Zemin
                                                                                                                                                                                                                                                                                                                                  Smith, Victoria Watanabe, Colin K.
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Desnoyers, Luc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Chen, Jian
                                                                                                                                                                                                                                                                                                                 Wood, William I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Application US/10174590
p. US20030008352A1
7.5%;
Score 74.5;
DB 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels 47;
Length 199;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              74
```

```
Š
                                                                  당
                                                                                               δ
                                                                                                                                  밁
                                                                                                                                                                 20
밁
                                                                                                                                                                                                       Best Local Similarity 20.8 Matches 33; Conservative
                              138 WVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCK 176
104 W---RKVSEANGSCKWS-NNFIRSSTEVMRRVHRAPSCK 138
                                                                                                  81 ITVWKAYDYTTENGIKYETOGTRTOTFEDVFVFSDYKNCDVIFVPKERGSDE----GDYEL 137
                                                                                                                                    15 LAEASESTMKIIKEEFTDEEMQYDMAKSGQEKQTIEILMNPILLVKNTSLSMSKDDMSST
                                                                  75 LLTFRSLHYNDPKG--
                                                                                                                                                                    30 LAQATQTTDGVWGEEFTCVSVTAE--KIGKKK-----LNATILYKNKHLTDLKES-HET
                                                                                                                                                                                                     20.8%; Pred. No. 4.4;
tive 28; Mismatches
                                                                                                                                                                                                       51;
                                                                                                                                                                                                       Indels
                                                                  NSSGNDKECCNDMTV 103
                                                                                                                                                                                                       47;
                                                                                                                                                                                                       Gaps
                                                                                                                                    74
                                                                                                                                                                      80
                                                                                                                                                                                                       7;
```

Search completed: August 1, 2003, 12:23:46 Job time : 19.0267 secs

THIS PAGE BLANK (USPTO)

```
Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OM protein .
                                                                                                                                                                                                                                                                                                                                                                                                              Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Perfect score:
                                                                                                                                                                                                                                                                                                                Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed and is derived by analysis of the total score distribution.
 73.74
73.74
73.73
72.5
72.5
72.5
72.5
71.5
71.5
71.5
                                                                                                                                                   75
75
75
74.5
                                                                                                                                                                                        76.5
75.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    seq length: 0 seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                     Issued_Patents_AA:*
1: /cgn2_6/ptodata/1.
2: /cgn2_6/ptodata/1.
3: /cgn2_6/ptodata/1.
4: /cgn2_6/ptodata/1.
5: /cgn2_6/ptodata/1.
6: /cgn2_6/ptodata/1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-087-195-8
989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   August 1, 2003, 12:15:04 ; Search time 13.8667 Seconds (without alignments) 555.330 Million cell updates/sec
                                                                                                                                                                                                                                                                  Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   328717 seqs, 42310858 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 NPTWANEAKLGSYQDAWKSL.....EKTVRNVYTDSSCKPAPAQN 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Copyright
   /cgn2_6/ptodata/1/1aa/5A_COMB.pep:*
/cgn2_6/ptodata/1/1aa/5B_COMB.pep:*
/cgn2_6/ptodata/1/1aa/6A_COMB.pep:*
/cgn2_6/ptodata/1/1aa/6B_COMB.pep:*
/cgn2_6/ptodata/1/1aa/FCTUS_COMB.pep:*
/cgn2_6/ptodata/1/1aa/PCTUS_COMB.pep:*
  GenCore version 5.1.6 (c) 1993 - 2003 Compugen Ltd.
       SUMMARIES
                                                                                                                                                                                                                                                                  Description
sequence
                                                                                                                                                                                                                                                Sequence
                                                                          31.5 Appli

3855, Ap

5367, Ap

5667, Ap

5667, Appl

24, Appl

6764, Ap

394, Appl

394, Appl

2129, Appl

23258, Appl

80, Appl

80, Appl

80, Appl
                           5, Appli
5, Appli
2, Appli
76, Appl
         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 1
US-07-807-022A-1
```

ALIGNMENTS

```
US-07-807-022A-1.
   Query Match
Best Local S
Matches 39
                                                                                                                                          TELEFAX: 908-594-4720
TELEX: 138825
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 202 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 1, Application US/07807022A Patent No. 5321010
                                                                                                                                                                                                                              APPLICATION NUMBER: US/07/807, FILING DATE: 19911210
CLASSIFICATION: 514
ATTORNEY/AGENT INFORMATION:
NAME: PATT, Richard S.
REGISTRATION NUMBER: 32,586
REFERENCE/DOCKET NUMBER: 1814:
TELECOMMUNICATION INFORMATION:
TELEPAN: 908-594-4720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Connolly, Thomas
APPLICANT: Neeper, Michael
APPLICANT: Waxman, Lloyd
TITLE OF INVENTION: Protein
TITLE OF INVENTION: Platelet
                                                                                        STRANDEDNESS: unknown
TOPOLOGY: unknown
MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NUMBER OF SEQUENCES: 2
CORRESPONDENCE ADDRESS:
 y Match 8.0%;
Local Similarity 21.4%;
hes 39; Conservative 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STREET: P.O. CITY: Rahway
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             08840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             New Jersey
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              E: Merck & Co.,
P.O. Box 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            USA
                                                                                                                           unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Protein for Inhibiting Adhesion Platelets to Collagen
                                                                                                                                                                                                                                                                                                                                                                                                 US/07/807,022A
                                                                                                                                                                                                  ۲.
30;
                                                                                                                                                                                                                                                                                          18143
Score 79.5; DB 1;
Pred. No. 0.75;
0; Mismatches 86;
   96;
                                     Length 202;
   Indels 27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        of.
   Gaps
```

```
밁
                                 δÕ
                                                                                                                                      ; LOCATION: (B) LOCATION 1...1095; SEQUENCE DESCRIPTION: SEQ ID NO: 3855: US-09-107-532A-3855
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-107-532A-3855
                                                                     Matches
                                                                                     Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 3855, Application US/09107532A Patent No. 6583275
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                INFORMATION FOR SEQ ID NO: 3855:
                                                                                                                                                                                                                                            MOLECULE TYPE: protein HYPOTHETICAL: YES ORIGINAL SOURCE:
                                                                                                                                                                                                           FEATURE:
                                                                                                                                                                                                                                                                                                          SEQUENCE CHARACTERISTICS:
LENGTH: 1095 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE/DOCKET NUMBER: GTC-012 TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE: ASCII
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Lynn A Doucette-Stamm and David Bush
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO
ENTEROCOCCUS FAECIUM FOR DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NUMBER OF SEQUENCES:
   819
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               143
                                15 DAWKSLQQ--DQNKRYYLAQATQT----TDGVWGEEFTCVSVTAEKIGKKKLNATI--- 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          74 LKESHETITVWKAYDYT-----TENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 33
                                                                     49;
                                                                                  Similarity
DATKAAQEKDEKAKPVVIAETSATLANKEKTGTWKIQH---KLTAEQV----LNKTIVLF 871
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: 60/085,598 FILING DATE: 14 May 1998 APPLICATION NUMBER: 60/051571 FILING DATE: July 2, 1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: US/09/107,532A FILING DATE: 30-Jun-1998 APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VΕ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NRNOPONIKNACEMWATANDANSVNSIAACEVVY --- ORRCNPNNSVDDTPYVTTCKWPP 199
                                                                                                                                                                                        NAME/KEY:
                                                                                                                                                                                                                          ORGANISM: Enterococcus faecium
                                                                                                                                                                                                                                                                                              TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                TELEPHONE: (781)893-5007
TELEFAX: (781)893-8277
                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME: Ariniello, Pamela Deneke
REGISTRATION NUMBER: 40,489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OPERATING SYSTEM: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STATE: Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CITY: Waltham
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RGSD----EGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTD----SSCKPAP 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            YDESQETYTKTKVYITTRLGRSGDRNHMGVSLQGYNHTGIEYKMIYDDDQGCAILKVTKD 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RDIWKT--YSKSKVFWLLRRTYWVD---GKRSLCRYGTVLK--RDKANHRI---EQIMGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDIUM TYPE: CD/ROM ISO9660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE:
                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           100 Beaver Street
                                                                                                                                                                                        misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENOME THERAPEUTICS CORPORATION
                                                                                7.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7310
                                                                  ; Score 78; D3
; Pred. No. 12;
34; Mismatches
                                                                                                    D3 4;
                                                                   64;
                                                                                                    Length 1095;
                                                                  Indels
                                                                   66;
                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              82
                                                                   13
                В
                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
```

```
US-09-107-532A-5304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-107-532A-5304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 5304, Application US/09107532A Patent No. 6583275 GENERAL INFORMATION:
                                                                                       Matches
                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                     INFORMATION FOR SEQ ID NO: 5304: SEQUENCE CHARACTERISTICS:
                                                                                                            Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REGISTRATION NUMBER: 40,489
REFERENCE/DOCKET NUMBER: GTV
TELECOMMUNICATION INFORMATION:
TELEPHONE: (781)893-5007
TELEFAX: (781)893-8277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: 60/085,598
FILING DATE: 14 May 1998
APPLICATION NUMBER: 60/051571
FILING DATE: July 2, 1997
ATTORNEY/AGENT INFORMATION:
NAME: Ariniallo, Pamela Deneke
                                                                                                                                                                                             NAME/KEY: misc_feature
LOCATION: (B) LOCATION 1...468
SEQUENCE DESCRIPTION: SEQ ID NO: 53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CORRESPONDENCE ADDRESS:
ADDRESSEE: GENOME THERAPEUTICS CORPORATION
STREET: 100 Beaver Street
                                                                                                                                                                                                                                                                                                                                             TOPÓLOGY: linear MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER: US/09/107,532A FILING DATE: 30-Jun-1998 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: Lynn A Doucette-Stamm TITLE OF INVENTION: NUCLEIC ACID ENTEROCOCCUS
                                                                                                                                                                                                                                                                 FEATURE:
                                                                                                                                                                                                                                                                                                         ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                              HYPOTHETICAL: YES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQUENCES: 7310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        872
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 988 KKVDTGKYPEGTKFTFAEINYDKDGTINGKHNE 1020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               109
  12 NYPLTWRPDKQKLKRPYYRSLIQQ-----
                                        12 SYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNA-TILYKNKH 70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 65
                                                                                     l Similarity
32; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NYVYENKEAFEAGDKPVAKDVSLNNQAQTV----SCTVEHHVSIQTKAHLENGSQTFTHG 927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OPERATING SYSTEM: <Unknown>
SOFTWARE: ASCII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DKID--KIPDCCKFTMAYFAQQQEKTVRNVYTD 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -- LYKNKH----
                                                                                                                                                                                                                                                                                   ORGANISM: Enterococcus faecium
                                                                                                                                                                                                                                                                                                                                                                                             TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CITY: Waltham
STATE: Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DVVDMFDDVSITHDVLDGSKEAFETILYALLPDGTNKEIWKSGKIEYEVNDKEFTKTVLA 987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DVF-VFSDYK-NCDVIFVPKERGS-----DEGDYELW---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER:
                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH: 468 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDIUM TYPE: CD/ROM ISO9660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COUNTRY:
                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        02354
                                                                                                          24.1%;
                                                                                                                              7.88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ----LTDLKESHETITVWKAYDYTTENGIKYETQ-----GTRTQTFE 108
                                                                                       16;
                                                                                   Score 77.5; DB Pred. No. 4.1; 16; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GTC-012
                                                                                                                                                                                               5304:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        and David Bush
AND AMINO ACID SEQUENCES RELATING TO
FAECIUM FOR DIAGNOSTICS AND THERAPEUTICS
                                                                                                                              DB 4;
                                                                                     50;
-- LEQDILKNKLQKNTQLPSQRE. 56
                                                                                                                            Length 468;
                                                                                       Indels
                                                                                       35;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ---VSE 141
                                                                                     Gaps
```

```
Ş
                                                 밁
                                                                                            ş
                                                                                                                                                        밁
                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                     ; NAME/KEY: misc_feature; LOCATION: (B) LOCATION 1...823; SEQUENCE DESCRIPTION: SEQ ID NO: 5667: US-09-107-532A-5667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-107-532A-5667
                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Application .....
squence 567, Application .....
squence sq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TELEFAX: (781)893-82
INFORMATION FOR SEQ ID NO: 566
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                           Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MOLECULE TYPE: protein HYPOTHETICAL: YES ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE/DOCKET NUMBER: GTC-012
TELECOMMUNICATION INFORMATION:
TELEPHONE: (781)893-5007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATTORNEY/AGENT INFORMATION:
NAME: Ariniello, Pamela Deneke
REGISTRATION NUMBER: 40,489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER READABLE FORM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRIOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
ADDRESSEE: GENOME THERAPEUTICS CORPORATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   116
  122
                                                                                                    69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        57
                                                                                                                                                                                                            14 QDAWKSLQQDQNKR-----YYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATILYKN 68
                                                                                                                                                                                                                                                                42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION LINES: 60/085,598
APPLICATION NUMBER: 60/051571
APPLICATION NUMBER: 60/051571
APPLICATION NUMBER: 60/051571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VSSFEECNKFVVP 128
                                                 ALLAGMPQAP-----SAYDPYV-----YPDQAKKRR---DTVLYTMLQNEKISQTEYD 309
                                                                                                    KHLTDLKESHETITVWKAYD-YTTENGIKYETQGTRTQTFEDVFVFSDYKNCDV-----
                                                                                                                                                        QEAWMAVRLEQKKSKQEILTYYVNKVYMSNGLYGME----TASEMYFGKKLSELSLPQT 264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: US/09/107,532A FILING DATE: 30-Jun-1998 APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FSDYKNCDVIFVP 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LADYLDLNFT-TVGKAYKYGIEKGLLYTNIGSGTFISPNVFESITISTNEVTEHIIDFGL 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVF-------V
--IFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTD 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OPERATING SYSTEM: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STATE: Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STREET: 100 Beaver Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOFTWARE: ASCII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDIUM TYPE: CD/ROM ISO9660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ZIP: 02354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LENGTH: 823 amino acids
                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (781)893-8277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Enterococcus faecium
                                                                                                                                                                                                                                                                                         24.3%;
                                                                                                                                                                                                                                                                                                                    7.88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5667:
                                                                                                                                                                                                                                                                                         Score 77.5; DB 4; Pred. No. 9.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60/085,598
1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             40,489
                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                62;
                                                                                                                                                                                                                                                                                                                 Length 823;
                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                41;
                                                                                                                                                                                                                                                             Gaps
                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-08-824-692-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-563-269-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-563-269-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: Patr
SOFTWARE: Patr
SEQ ID NO 19
FONCTH: 341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 2. Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Patent No. 6555655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH: 341
TYPE: PRT
ORGANISM: Bacillus thuringlensis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                           COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                     CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: Sharkey, Richard G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Hass, G.
TITLE OF INVENTION:
TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQUENCES:
                                                                                                    APPLICATION NUMBER: FILING DATE: 08-API
                                                                                                                                                                                                                                                                                                                                          COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                         STREET:
  REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 24, A. 7.7.03
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                19,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INFORMATION:
                                                                                                                                                                                                                                                                                                                    98104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                              Seattle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                  Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MALVAR, THOMAS M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SLANEY, ANNETTE C. BAUM, JAMES A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TAN, YUPING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DONOVAN, WILLIAM P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PEASE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RUPAR, MARK J.
                                                                                                                                                                                                                                                                                                                                          USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Enfield,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Kinders,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MECO164
                                                                                                                                                                                                                                                                Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CHIH-REI
                                                                                                  08-APR-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ELIZABETH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Robert J.
David L.
```

```
CURRENT APPLICATION NUMBER: US/09/563,269
CURRENT FILING DATE: 2000-05-03
NUMBER OF SEQ ID NOS: 34
                  COMPOTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        213 QEKSQRNVLATLDYSKEGQAGKKYT-MMYTADQLATKIPG----YNPPPRVEQDRSHNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           310 QAVNVP----VTDGLQELTQSDDN-TKIVD--NYVKEVINEVQEKTDKNVYTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       268 TIHSDLIVNLKEDFAYEIIVKFENLSYSTLFNEDLFIYRFDKNHNLL-IEKTVGS 321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        22 QDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATILYKNKHLTDLKESHETI 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TVWK-----AYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGS 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Application US/08824692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Application US/09563269
                                                                                                                                                                                                                                                                                  6300 Columbia Center,
                                                                                                                                                                                                                                                                                                             SEED and BERRY LLP
                                                                                                                                                                                                                                                                                                                                                                         G. Michael
N: METHODS AND COMPOSITIONS FOR SCREENING
NO. FOR OR MODULATING A TUMOR ASSOCIATED ANTIGEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COLEOPTERAN-TOXIC POLYPEPTIDE COMPOSITIONS AND INSECT RESISTANT TRANSGENIC PLANTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7.8%; Score 77;
24.3%; Pred. No.
US/08/824,692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                     701 Fifth Avenue
                                                   Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 4; Length 341;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
```

```
RESULT 8
US-09-071-035-396
                                                                                                                                                                                                                       Q.
                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 7
US-09-328-352-6764
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                          ; ORGANISM: Acinetobacter baumannii
US-09-328-352-6764
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; TOPOLOGY: US-08-824-692-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Gary L. Breton et al.

TITLE OF INVENTION: NUCLEIC ACID AMINO ACID SEQUENCES RELATING TO ACINETOBACTER
TITLE OF INVENTION: BAUMANNII FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: GTC99-03PA
CURRENT APPLICATION NUMBER: US/09/328,352
CURRENT FILING DATE: 1999-06-04
NUMBER OF SEQ ID NOS: 8252
SEQ ID NO 6754
                                                                                   Sequence 396, Application US/09071035 Patent No. 6448043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 6764, Application US/09328352 Patent No. 6562958
                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                    GENERAL INFORMATION: APPLICANT: Gil H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX: (206) 682-60 INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                           LENGTH: 347
TYPE: PRT
NUMBER OF SEQUENCES: (
                                    TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE CHARACTERISTICS:
LENGTH: 216 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE/DOCKET NUMBER: 13
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                     Match 7.6%;
Local Similarity 22.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEPHONE:
                                                                                                                                                                                          285 LMVSGTHLLDINANKKVFTKSQGFDSIYGSSYHVNKFNVENGI-YKTE 331
                                                                                                                                                                                                                                                               234 NMSHLTAHQEEWKKIIQVWDKTVKYINDPATHÄ------DAVKIMANRSGVDPKQYE 284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            175 CKPAP 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              116 YKNCDVIFVPKERGSDEGDYE-LWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSS 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                107 SPISQKIIYKEN---
                                                                                                                                                                                                                            64 ILYKNKHLTDLKESHETITVWKAYD---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    47 SSAMEPDREYHFGQAVRFVCNSGYKIEGDEEMHCSDDGFWGKEKPKCVEISCKSPDVING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     19 SLQQDQNKRYYLAQATQ------TTDGVWGEEF-TCVSVTAEK---IGK 57
                                                                                                                                                                                                                                                                                              6 NEAKLGSYQDAWKSLQQ--DQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNAT 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity 19.5
36; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WIPAP 206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EKSCDNPYIP-----NGDYSPLRIKHRTGDEITYQCR--NGFYPATRGNTAK--CTSTG 201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KKLNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTR--TQTFEDVFVFSD 115
                                                   Gil H. Choi
                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (206) 622-4900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    682-6031
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7.7%;
                                Enterococcus faecalis Polynucleotides and Polypeptides
                  496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       24:
                                                                                                                                                                                                                                                                                                                                    19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         31;
                                                                                                                                                                                                                                                                                                                                                   Score 75.5; D. Pred. No. 4.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         130001.404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 76.5;
Pred. No. 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -----ERFQYKCNMGYEYSERGDAVCTESGWRPLPSCE 151
                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                     DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 3;
                                                                                                                                                                                                                                                                                                                                    42;
                                                                                                                                                                                                                            -YTTENGIKYETQ 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         69;
                                                                                                                                                                                                                                                                                                                                                                    Length 347;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 216;
                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                    23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    106
```

```
80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; TOPOLOGY: linear ; MOLECULE TYPE: protein US-09-071-035-396
                                                                                                                                                                                                                                                                                                                                                                   RESULT 9
US-09-071-035-358
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                        Patent No.
                                                                                                                                                                                                                                                                                                                                                      Sequence 358, Application US/09071035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION: APPLICANT: Gil H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INFORMATION FOR SEQ ID NO:
                                                                           OPERATING SYSTEM: MSDO:
SOFTWARE: ASCII Text
CURRENT APPLICATION DATA:
PRIOR APPLICATION DATA: APPLICATION NUMBER:
                                                                                                                                    COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette,
                                                                                                                                                                                                                                                            CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATTORNEY/AGENT INFORMATION: NAME: A. Anders Brookes
                                                                                                                                                                                                                                                                          NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CLASSIFICATION:
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                            TITLE OF INVENTION:
                               CLASSIFICATION:
                                                                                                                         COMPUTER:
                                                                                                                                                                                                  CITY: Rockville
STATE: Maryland
                                                FILING DATE:
                                                             APPLICATION NUMBER:
                                                                                                                                                                                    COUNTRY:
                                                                                                                                                                                                                                STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STREET: 9410 Key West Avenue CITY: Rockville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFTWARE: ASCII Text
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COUNTRY:
                                                                                                                                                                                                                                            ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         400 GTNKEIWKSGKIEHEVNDKEFTKTVLAEKVDTGKYPEGTKFTFTEINYEKDGN------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11
                                                                                                                                                                                                                                                                                                                                                                                                                                                           65 LYKNKHLTDLKESHETIT 82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    22;
                                                                                                                                                                                                                                                                                                                                          6448043
                                                                                                                                                                     20850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              20850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GSYQDAWKS--LQQDQNKRYY----LAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATI 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                               -VNGKHNEDLKEKSQTLT 469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A. Anders Brookes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Maryland
                                                                                                                                                                                                                              E: Human Genome Scie
9410 Key West Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       500 amino acids
                                                                                                                                                                                                                                                                                                          Gil H. Choi
                                                                                                                                                                                    USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                        HP Vectra 486/33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HP Vectra 486,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Human Genome Sciences,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (301) 309-8504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Diskette,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                309-8512
                                                                                                                                                                                                                                            Genome Sciences,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  7.6%;
28.2%;
                                                                                                         MSDOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MSDOS version 6.2
                                                                                                                                                                                                                                                                                          Enterococcus faecalis Polynucleotides and Polypeptides
                                                                                                                                                                                                                                                                            496
                                                             us/09/071,035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US/09/071,035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            36,373
                                                                                                                                      3.50 inch, 1.4Mb storage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      396:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3.50 inch, 1.4Mb storage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13;
                                                                                                         version 6.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PB369P2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 75; I
Pred. No. 8.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 4;
8.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           452
```

```
; MOLECULE TYPE: US-09-071-035-394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 10
US-09-071-035-394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; TYPE: amino acid
; STRANDEDNESS: single
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-09-071-035-358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEFAX: (301)
INFORMATION FOR SEQ ID NO: 35:
SEQUENCE CHARACTERISTICS:
SEQUENCE TRACTH: 1074 amino acids
                                                                                                         TELEFAX: (301) 309-8512 INFORMATION FOR SEQ ID NO: 394:
      Lent No. 644804
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELECOMMUNICATION INFORMATION: TELEPHONE: (301) 309-8504
                                                                                       SEQUENCE CHARACTERISTICS:
                                                                                                                                     REGISTRATION NUMBER: 36,373
REFERENCE/DOCKET NUMBER: PREFERENCE/DOCKET NUMBER: PREFERENCE/DOCKET NUMBER: 0.001
TELEPHONE: (301) 309-8504
                                                                                                                                                                                                                                                PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE OF INVENTION: Enterococcus faecalis Polynucleotides and Polypeptides NUMBER OF SEQUENCES: 496
                                                                                                                                                                                                                  ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                               COMPUTER: HP Vectra 486/33
OPERATING SYSTEM: MSDOS ve
SOFTWARE: ASCII Text
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CITY: Rockville
                                                                                                                                                                                                                                                                                  CLASSIFICATION:
                                                                                                                                                                                                                                                                                                    FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                             MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                              COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity
                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  993 - VNGKHNEDLKEKSQTLT 1009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                940 GTNKEIWKSGKIEHEVNDKEFTKTVLAEKVDTGKYPEGTKFTFTEINYEKDGN----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     394, Application US/09071035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11 GSYQDAWKS--LQQDQNKRYY----LAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              65 LYKNKHLTDLKESHETIT 82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             22; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                            20850
                                                                                                                                                                                                A. Anders Brookes
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Maryland
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A. Anders Brookes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           E: Human Genome Sciences, Inc. 9410 Key West Avenue
                                                                                                                                                                                                                                                                                                                                                                                             Diskette, 3.50 inch, 1.4Mb storage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Choi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          7.68;
                                                                                                                                                                                                                                                                                                                                                              MSDOS version 6.2
                                                                                                                                                                                                                                                                                                                 US/09/071,035
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 36,373
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       358:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          13; Mismatches
                                                                                                                                                                       PB369P2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PB369P2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 75;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         . 25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1074;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ω
```

```
δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 11
US-09-198-452A-1120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ŷ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 12
US-09-634-238-229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; ORGANISM: Chlamydia pneumoniae US-09-198-452A-1120
; ORGANISM: Lactobacillus rhamnosus
JS-09-634-238-229
                              SOFTWARE: FA
SEQ ID NO 229
LENGTH: 771
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CURRENT APPLICATION NUMBER: US/09/198,452A CURRENT FILING DATE: 1998-11-24 NUMBER OF SEQ ID NOS: 6849 SEQ ID NO 1120 LENGTH: 334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION: APPLICANT: Griffals,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 1120, Application US/09198452A Patent No. 6559294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                 Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE OF INVENTION: Chlamydia pneumoniae genomic sequence and polypeptides, fragme TITLE OF INVENTION: thereof and uses thereof, in particular for the diagnosis, pr TITLE OF INVENTION: and treatment of infection
                                                                                                                CURRENT APPLICATION NUMBER: US/09/634,238
CURRENT FILING DATE: 2000-08-08
                                                                                                                                                      FILE REFERENCE:
                                                                                                                                                                 TITLE OF INVENTION: Polynucleotides,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILE REFERENCE: 9710-003-999
                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                         APPLICANT
                                                                                                                                                                                                                                                                           APPLICANT
                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                 PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Similarity 28.4%;
                                                                                                                                                                                                                                                                                                                                                                                 INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  993 - VNGKHNEDLKEKSOTLT 1009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         940 GTNKEIWKSGKIEHEVNDKEFTKTVLAEKVDTGKYPEGTKFTFTEINYEKDGN-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       149 DAGLYAYNHNLDSSPEFYETIITTRSYEDRLNTLDVVNKSGI 190
                                                                                                                                                                                                                                                                                                                                                                                                                 229,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11 GSYQDAWKS--LQQDQNKRYY----LAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATI 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    65 LYKNKHLTDLKESHETIT 82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 NATILYKNKHLTDLKESHETITVWKAY-----DYTTENGI 95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5 ANEAKLGSYQDAWKSLQQDQNKRYY---LAQATQTTDGVWGEEFTC-VSVTAEKIGKKKL 60
                                                                                                                                                                                                                                                                                                                                                                                                 49, Application US/09634238
6544772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATRVCLGA---AWRNAKDD---RYFDRVLAMVKSITD--LGAEVCCALGMLSEEQAKKLY 148
                                                                                 FastSEQ for Windows Version 4.0
                                                                                                                                                                                                     Coolbear, Timothy
                                                                                                                                                                                                                                       Holland, Ross
O'Toole, Paul W.
                                                                                                                                                                                                                   Reid, Julian R.
                                                                                                                                                                                                                                                                          Christensson, Anna C.
                                                                                                                                                                                                                                                                                        Lubbers, Mark W.
Dekker, James
                                                                                                                                                                                                                                                                                                                           Havukkala, Ilkka J.
Bloksberg, Leonard, N.
                                                                                                                                                                                                                                                                                                                                                               Glenn, Matthew
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                11000.104301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7.6%;
28.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 74.5; DI
Pred. No. 5.4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 75;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                  materials incorporating for using them.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 334;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         992
```

밁 Š Вþ 5

```
US-09-252-991A-23258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; TYPE: PRT ; ORGANISM: Lactobacillus rhamnosus US-09-634-238-262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 13
US-09-634-238-262
                                                                                                                                                                                                                           GENERAL INFORMATION:
                                                                                                                                                                                                                                         Sequence 23258, Application US/09252991A
Patent No. 6551795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 262
LENGTH: 771
                                  SEQ ID NO 23258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Patent No.
                                                                 PRIOR APPLICATION NUMBER: US 60/094,190 PRIOR FILING DATE: 1998-07-27
                                                                                             PRIOR APPLICATION NUMBER: US (PRIOR FILING DATE: 1998-02-18
                                                                                                                                CURRENT APPLICATION NUMBER: US/09/252,991A CURRENT FILING DATE: 1999-02-18
                                                                                                                                                                          APPLICANT: Marc J. Rubenfield et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID
TITLE OF INVENTION: AERUGINOSA FOR DIAGNOSTICS A
                                                  NUMBER OF SEQ ID NOS:
                                                                                                                                                                FILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CURRENT FILING DATE: 2000-08-08
NUMBER OF SEQ ID NOS: 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT APPLICATION NUMBER: US/09/634,238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ITLE OF INVENTION: Polynucleotides, materials inco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PPLICANT:
                     LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                        620 KPTSHGISYAEQTISQKIYKALMSYT--
                                                                                                                                                                                                                                                                                                                                                                                                     571 YQAGKTGTTD--YSDE-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         620 KPTSHGISYAEQTISQKIYKALMSYT-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    571 YQAGKTGTTD--YSDE-----ELKQNPALNATGIAKDAWFTGYTR-NRVISVWTGYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             262, Application US/09634238
). 6544772
                                                                                                                                                                                                                                                                                                                                                                                                                                29 YLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATILYKNKHLTDLKESHETITVWKAYD 88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                    YTTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSDEGDYELWVSEDKID 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       YTTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSDEGDYELWVSEDKID 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  YLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATILYKNKHLTDLKESHETITVWKAYD 88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Holland, Ross
O'Toole, Paul W.
Reid, Julian R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Christensson, Anna C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Dekker, James
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Havukkala, Ilkka J.
Bloksberg, Leonard,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Coolbear,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Glenn, Matthew
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                107196.136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11000.104301
                                                                                                1999-02-18
1999-02-18
THER: US 60/074,788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mark W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Timothy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 74; DB
Pred. No. 20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 74;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                   ELKQNPALNATGIAKDAWFTGYTR-NRVISVWTGYD 619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       materials incorporating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB
20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4; Length 771
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4; Length 771;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    47;
                                                                                                                                                                               AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -SQNLDNKDWTKPDTVE 661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                            RELATING TO PSEUDOMONAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      619
                                                                           δõ
                S
                                                 밁
                                                                                                             밁
                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; ORGANISM: Pseudomonas aeruginosa US-09-252-991A-23258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 15
US-08-961-083-80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                          US-08-961-083-80
                                                                                                                                                                             Matches
                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Patent No. 6159469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                   TELEFAX: (301) 309-85
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CLASSIFICATION: 435
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION DATA: APPLICATION NUMBER: US
                                                                                                                                                                                                                                                                                                                                    SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                    TELEPHONE: (301) 309-8504
                                                                                                                                                                                                                                                         MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQUENCES: 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE OF INVENTION:
                                                                                                                                                                                                                                                                         TOPOLOGY:
                                                                                                                                                                                                                                                                                     STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                NAME: Brookes, A. Anders REGISTRATION NUMBER: 36,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OPERATING SYSTEM: MS SOFTWARE: ASCII Text
                                                                                                                                                                                           Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                 TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STREET:
                                                                                                                                                                                                                                                                                                                    LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local
                                                 156 FDYKWNMGWMNDILRFYEEDPIYRKYDFNLVTFSFMYVXKENYLLPFSHDEVVHGKKSMM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            80,
                                                                                                               96
                97 YETQGTRTQTFEDVFVFSDYKNC----DVIFVPKERGSDEGDYELWVSEDKID--KIPDC 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        29
                                                                                                                                                                             40;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 l Similarity
27; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        20850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Rockville
                                                                                                                                                                                                                                                                                                       amino acid
                                                                              ATILYKNKHLTDLKESHETITVWKAYDYTT--
                                                                                                                                           YQDA-WKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEK-----IGKKK---LN 61
                                                                                                             YDDAPWTPNKDGGNLNYEGYYFLQRLNEVIKLEYPDVMMIAEESSSAIKITGMKEIGGLG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ------KKLNATILYKNKHLTDLKE----SHETITVWKA 86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RTAKAPAGKRARKVKQYKNPHTGEVIETKGGNHKTLKEWKA 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATEEAIKELQERLKSLEQDDKLKKELEFEEKLRTLMGTYQKSLRDVISLLDPDAKIGKST 88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Maryland
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Application US/08961083
                                                                                                                                                                                                                                                                                                                  325 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Choi et.
                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       USA
                                                                                                                                                                                                                                                                         linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HP Vectra 486/33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Diskette,
                                                                                                                                                                                                                                                                                     single
                                                                                                                                                                                                                                                                                                                                                                     309-8512
                                                                                                                                                                                           7.48;
                                                                                                                                                                                                                                                                                                                                                                                  309-8504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Genome Sciences,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MSDOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  7.48;
26.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   452
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US/08/961,083
                                                                                                                                                                                                                                                                                                                                                                                                                                36,373
                                                                                                                                                                                                                                                                                                                                                     80:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           version 6.2
                                                                                                                                                                                                                                                                                                                                                                                                                PB340P2
                                                                                                                                                                                           Score 73; I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 73.5; DI Pred. No. 2.1;
                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
::
::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Inc
                                                                                                                                                                                                         DB 3;
                                                                                                                                                                             84;
 =
-
..
                                                                                                                                                                                                         Length 325;
```

Ş 밁 ρy

밁

```
5 ANEAKLGSYQDAWKSLQQDQ--NKRYYLAQATQTTDGVWGEEFTCVSVTAE---KIGK-- 57
                                                        DB 4;
                            41;
                                                        Length 144;
                            Indels
                            19;
                            Gaps
```

```
Streptococcus pneumoniae Antigens and Vaccines
.50 inch, 1.4Mb storage
```

Indels

50;

Gaps

8

-ENGIK

Search completed: August 1, 2003, 12:17:22 Job time : 15.8667 secs

THIS PAGE BLANK (USPTO)

```
Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Title: . . Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Minimum DB seq
Maximum DB seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                    Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Run on:
                                                                                                                                                                                                                                                                                                        õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                       and is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No.
      989
331.5
331.5
331.5
331.5
267.5
                                                                                                                                                                                                                                                                                                     Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                 No. 1s the number of results predicted by chance to have a greater than or equal to the score of the result being printed, s derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                 Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BLOSUM62
Gapop 10.0 ,
   100.0
100.0
100.0
33.5
33.5
33.5
27.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10:
11:
12:
13:
14:
15:
16:
17:
19:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1107863 seqs, 158726573 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-087-195-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    August 1, 2003, 12:15:04 ; Search time 56.5067
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SIDSI/gcgdata/geneseq/geneseqp-embl/AA1981 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1982 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1982 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1983 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1984 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1985 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1986 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1987 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1988 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1998 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1999 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1991 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1991 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1991 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1992 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1993 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1993 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1995 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1995 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1999 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1999 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA1999 DAT: *
| SIDSI/gcgdata/geneseq/geneseqp-embl/AA199 DAT: *
| SIDSI/gcgdata/geneseq/geneseq-genebl/AA2000 DAT: *
| SIDSI/gcgdata/geneseq/geneseq-genebl/AA2000 DAT: *
| SIDSI/gcgdata/geneseq/geneseq-genebl/AA2000 DAT: *
| SIDSI/gcgdata/geneseq/geneseq-genebl/AA2000 DAT: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A_Geneseq_19Jun03:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NPTWANEAKLGSYQDAWKSL.....EKTVRNVYTDSSCKPAPAQN 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Copyright
                                                                                                                                                                                                                                                                                                     Length
      182
200
200
271
171
171
190
190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GenCore version (c) 1993 - 2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gapext 0.5
                                                                                                                                                                                                                                                                                                        B
      IJ
                               AAB74290
AAB73262
AAW37448
AAX18080
AAB74289
AAB73261
AAW37447
AAX18079
                                                                                                                                                                                                                                                                                                                                                                                            SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (without alignments)
511.236 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Compugen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1107863
                                                                                                                                                                                                                                                                                  Description
                                                        Histacalin protein
Histacalin protein
Tick vasoactive am
   Histacalin protein
                                                                                                                                                  Tick vasoactive an Histamine binding
                                                                                                                                                                                                          Histacalin protein
                                  Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Seconds
                                                                                                                                                                                 am
AAB74290

AAB74290

ID AAB7

XX

AC AAB7

XX

DX AB7

DX 20-J

XX

WO20

XX

WO20

XX

WO20

XX

WO20

XX

WO21

XX

WO21

XX

WO21

XX

WO21

XX

WO21

XX

WO21

XX

WO20

XX

WO20

XX

WO21

XX

WO20

WO20

XX

WO20

WO20

XX

WO20

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 1
                                                                                                                                                     WPI;
                                                                                                                                                                                                                                                                                                                              01-SEP-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       08-MAR-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO200115719-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAB74290;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20-JUN-2001
```

45 77														79	79	80		27 82.5	83				92	101	109	119	123	N	251	251	N	N	267	267	N
7 7.8	7.		7.	œ	8.	8.	8	6 0.	.	8.	В	<u>ھ</u>	8.	8.	8.	8.	8.	5 8.3	8.	œ	.	.	9.	10.	11.	12.	12.	24.	25.	25.	26.		27.	N	5 27.0
745	341	423	429	1830	1607	1605	1491	542	541	431	396	375	221	2681	202	721	392	1802	778	1959	514	483	321	207	161	284	285	198	209	209	203	203	190	190	172
24	21	23	23	14	23	22	23	21	21	21	20	23	22	24	14	23	23	21	22	23	23	23	20	20	23	20	20	20	20	19	20	20	20	19	22
ABP75664	AAB36492	ABB47375	ABP73831	AAR44504	AAE23210	AAU33182	AAE23209	AAB27996	AAB27995	AAB27933	AAY25660	ABB49335	AAY97764	ABJ19025	AAR37467	ABB47955	ABP30105 ·	AAB18217	AAU35135	ABB49411	ABB07484	ABB48292	AAY18089	AAY18083	ABP04842	AAY18088	AAY18087	AAY18084	AAY18081	AAW37449	AAY18085	AAY18086	AAY18078	74	AAB73260
Human secretory po	Bacillus thuringie	Listeria monocytog	Candida albicans e	Urea amide lyase.	Human mitogen-acti	Novel human secret			Human secreted pro	Human secreted pro	Ragweed allergen 1	Listeria monocytog	I. scapularis Salp	spec	Sequence of prote	Listeria monocytog	Streptococcus poly	Plasmodium falcipa	Enterococcus faeca	Listeria monocytog	Theobroma cacoa as	Listeria monocytog		Histamine binding	×				Histamine binding	ø			Histamine binding	a	Histacalin protein

ALIGNMENTS

Histacalin; MS-HBP1; conjunctivitis. Nuttall PA, Paesen GC; 24-AUG-2000; 2000WO-GB03282. Histacalin protein MS-HBP1 AAB74290 standard; (EVOL-) EVOLUTEC LTD. 2001-257675/26. (first entry) 99GB-0020674. protein; 182 Ş

Use of histacalin proteins for treating or preventing non-infective conjunctivitis, or for manufacturing a medicament for treating or preventing conjunctivitis, e.g. seasonal or perennial allergic conjunctivitis

```
뭐
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ΛÕ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δĀ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query
Best I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
         The present invention relates to a method for treating or preventing allergic rhinitis. The method involves employing a blood-feeding ectoparasite-derived (e.g. tick-derived) histacalin protein. The presequence is one such histacalin protein. The histacalin protein, is useful for treating or preventing allergic rhinitis, both seasonal apperennial allergic conjunctivitis.
                                                                                                         Use of histacalin proteins for treating or preventing allergic rhinitis, or for manufacturing a medicament for treating or preventing allergic rhinitis, e.g. seasonal or perennial allergic rhinitis
                                                                                        Disclosure;
                                                                                                                                                         WPI;
                                                                                                                                                                                                                         01-SEP-1999;
                                                                                                                                                                                                                                                                    08-MAR-2001.
                                                                                                                                                                                                                                                                                                                                   MS-HBP1; histacalin opthalmological; all
                                                                                                                                                                              Nuttall
                                                                                                                                                                                                                                                                                                              Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The for is
                                                                                                                                                                                                  (EVOL-)
                                                                                                                                                                                                                                             24-AUG-2000; 2000WO-GB03287
                                                                                                                                                                                                                                                                                          WO200116164-A2
                                                                                                                                                                                                                                                                                                                                                                   Histacalin protein MS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                          15-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                               AAB73262;
                                                                                                                                                                                                                                                                                                                                                                                                                                    AAB73262 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                e present invention relates to the use of a histacalin protein reating or preventing conjunctivitis. The present sequence the histacalin protein FS-HBP1. The invention is particularly the treatment of allergic or seasonal conjunctivitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Match
                                                                                                                                                        2001-218521/22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     182;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4:
                                                                                                                                                                              PA,
                                                                                                                                                                                                    EVOLUTEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKPAPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Page
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKPAPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              182
                                                                                      Pages 4-6; 19pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                             Paesen
                                                                                                                                                                                                                                                                                                                                                                                         (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5-6;
                                                                                                                                                                                                                         99GB-0020673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AA;
                                                                                                                                                                                                                                                                                                                                   lin protein;
allergic rh
                                                                                                                                                                                                                                                                                                                                                                                                                                   protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19pp;
                                                                                                                                                                              39
                                                                                                                                                                                                                                                                                                                                                                                         entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        English.
                                                                                                                                                                                                                                                                                                                                    in; antiinflammatory;
rhinitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No. 3.1
Preds No. 3.1
O; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                   Ā
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 22;
3.1e-94;
es 0;
                                                                                                                                                                                                                                                                                                                                             antiallergic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                   seasonal and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0,
                                          The present
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           60
```

```
RESULT 3
AAW37448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                              New vasoactive amine binding proteins and related nucleic vectors - transformed cells and transgenic animals, used f assaying or removing histamine and as antihistamine or anti-inflammatory agents
                                                                                                              WPI; 1998-018506/02.
N-PSDB; AAV00229.
                                                                                                                                                                                                                                                                                                                                         histamine; serotonin; assay; antil
insect bite; snake bite; scorpion
transgenic animal; tick.
                                                                                                                                           Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                  Male-specific vasoactive amine binding protonistamine; serotonin; assay; antihistamine; insect bite; snake bite; scorpion bite; derr
                                                                                                                                                                                                                                                                                                                                                                                        Tick
                                                                                                                                                                               18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                                                          Modified-site
                                                                                                                                                                                                                                                                                                        Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
                                                                                                                                                            (OXFO-) OXFORD
                                                                                                                                                                                                          19-MAY-1997;
                                                                                                                                                                                                                             27-NOV-1997.
                                                                                                                                                                                                                                                WO9744451-A2
                                                                                                                                                                                                                                                                                              Peptide
                                                                                                                                                                                                                                                                                                                        Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                           08-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                              AAW37448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local
                                                                                                                                                                                                                                                                                                                                                                                       vasoactive amine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             100.0%; conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKPAPA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKL
                                                                                                                                                                                                                                                                                                                                                                                                                                               standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             182
                                                                                                                                          Paesen
                                                                                                                                                                                                                                                                                                                        appendiculatus
                                                                                                                                                            VACS LTD.
                                                                                                                                                                               97GB-0007844
96GB-0010484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ΑĄ;
                                                                                                                                                                                                          97WO-GB01372
                                                                                                                                                                                                                                                                         /label= Sig_peptide
79..81
                                                                                                                                                                                                                                                                                                      Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                              Protein;
                                                                                                                                           GC;
                                                                                                                                                                                                                                                                                                                                                                                                          entry)
                                                                                                                                                                                                                                                                "Asn is N-glycosylated"
                                                                                                                                                                                                                                                                                                                                                                                       protein 1 MS-HBP1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 989; DB 22;
Pred. No. 3.1e-94;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                    protein 1; MS-HCP1;
                                                                                                                                                                                                                                                                                                                                                    dermatitis;
                                                                                                                                                                                                                                                                                                                                                             anti-inflammatory;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                    vaccine;
                                                                                    for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          60
```

This protein comprises tick Rhipicephalus appendiculatus (Ra) no male-specific histamine binding protein 1 (MS-HBP1). Its amino acid sequence was deduced from a cDNA clone (see AAV00227) obtain from a salivary gland cDNA library. Female-specific HSP1 and

) obtained and

novel

Example

2;

Fig

ω.

44pp;

English.

```
AAY18000 ID AAY1800 I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
Matches 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 body fluids or cell culture supernatants, e.g. to monitor the effect of allergens; (11) for binding VA, e.g. to remove histamine from blood, food, cell cultures etc.; (111) as an antihistamine or anti-inflammatory agents, e.g. for treating insect, snake or scorpion bites or dermatitis, or as a carrier for slow release of histamine-related compounds; (1v) in vaccines to protect against metazoan parasites, especially in animals; (v) as reagents for studying inflammation, involvement of VA in ulcer formation or the immune response etc. VABPS provide a more sensitive assay for histamine than low-affinity antibodies currently used. They may also be more effective and safer than conventional antihistamines.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergtc rhinitis; atopic dermatitis; food allergy; doubting allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator;
                                                         Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Histamine binding protein MS-HBP1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAY18080 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HSP2 (see AAW37446-47) and a related protein, D.RET6 (see AAW37449) from Dermacenter reticularis, were also identified. These novel vasoactive amine binding proteins (VABPs) can be expressed in host cells using e.g. a baculovirus expression system. They can be used: (1) to assay histamine (or other VA such as serotonin) in body filled a could be used: (1) to assay histamine (or other VA such as serotonin) in
                                                                                                                                                                                                                                                                                                                        03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                  WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                         Rhipicephalus
                                                                                                                                                                          26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                               26-NOV-1998;
                                                                                                                (OXFO-) OXFORD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKPAPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKPAPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                100.0%;
ilarity 100.0%;
Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                         Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                         appendiculatus.
                                                                                                                VACS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ₹
                                                                                                                                                                          98GB-0013917.
97GB-0025046.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             blood-sucking ectoparasite;
                                                                                                                                                                                                                                                               98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Protein; 200
                                                                                                                   LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 989; DB 19;
Pred. No. 3.5e-94;
; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  . 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               78
```

```
RRESULT 5
AAB742
AAB742
AC AAB7
XX AAB74
AC AAB7
XX AAB74
AC AAB7
XX H1st
XX H1st
XX H1st
XX W020
XX W020
XX W020
XX W020
XX W020
XX W1se
PD 08-M
XX PF 24-A
XX PF 24-A
XX W1-S
XX WPI;
XX WPI;
XX WPI;
XX WPI;
XX WSe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SXCCCCCCCCCCXXXX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
Matches 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used as components of vaccines directed against blood-sucking also be used as components of vaccines directed against blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   of allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           N-PSDB; AAX76966
                                                                                                              01-SEP-1999;
                                                                                                                                                                      08-MAR-2001
                                                                                                                                                                                                 WO200115719-A2
                                                                                                                                                                                                                           Unidentified
                                                                                                                                                                                                                                                       Histacalin; FS-HBP1; conjunctivitis
                                                                                                                                                                                                                                                                                  Histacalin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ectoparasites
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Histamine and serotonin binding
                                                       Nuttall PA,
                                                                                                                                         24-AUG-2000; 2000WO-GB03282
                                                                                                                                                                                                                                                                                                              20-JUN-2001
                                                                                                                                                                                                                                                                                                                                           AAB74289;
                                                                                                                                                                                                                                                                                                                                                                      AAB74289 standard;
                                                                                  (EVOL-)
                             2001-257675/26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                           199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19
                                                                                   EVOLUTEC LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKPAPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       F1g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QN 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NATILYKNKHLIDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKPAPA
                                                                                                                                                                                                                                                                                                                                                                                                                                         õ
                                                                                                                                                                                                                                                                                  protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                       Paesen GC
                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ω
••
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ž
                                                                                                               99GB-0020674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       84pp; English.
                                                                                                                                                                                                                                                                                                                                                                      protein;
                                                                                                                                                                                                                                                                                    FS-HBP2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100.0%;
                                                                                                                                                                                                                                                                                                                                                                       171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 989; DB 20;
Pred. No. 3.5e-94;
; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                      B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                compounds useful for the treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 200;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              78
```

Use of histacalin proteins for treating or preventing non-infective

```
В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SXX CCC CXX PT PT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Ma
Best Loc
Matches
                                The present invention relates to a method for treating or preventing allergic rhinitis. The method involves employing a blood-feeding ectoparasite-derived (e.g. tick-derived) histacalin protein. The presequence is one such histacalin protein. The histacalin protein, is useful for treating or preventing allergic rhinitis, both seasonal ar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim
                                                                                                                                                            Use
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                conjunctivitis, or for manufacturing a medicament for treating preventing conjunctivitis, e.g. seasonal or perennial allergic conjunctivitis \boldsymbol{\cdot}
                                                                                                                                                                                   WPI;
                                                                                                                                                                                                                                                                                                                                                      Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                               Histacalin protein FS-HBP2
                                                                                                                                                                                                          Nuttall
                                                                                                                                                                                                                                 (EVOL-)
                                                                                                                                                                                                                                                         01-SEP-1999;
                                                                                                                                                                                                                                                                               24-AUG-2000;
                                                                                                                                                                                                                                                                                                       08-MAR-2001
                                                                                                                                                                                                                                                                                                                              WO200116164-A2
                                                                                                                                                                                                                                                                                                                                                                            opthalmological;
                                                                                                                                                                                                                                                                                                                                                                                          FS-HBP2;
                                                                                                                                                                                                                                                                                                                                                                                                                                        15-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAB73261;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAB73261 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          tor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                e present invention relates to the use of a histacalin protein r treating or preventing conjunctivitis. The present sequence the histacalin protein FS-HBP1. The invention is particularly the treatment of allergic or seasonal conjunctivitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Match
                                                                                                                              of histacalin proteins for treating or preventing allergic nitis, or for manufacturing a medicament for treating or preventing ergic rhinitis, e.g. seasonal or perennial allergic rhinitis
                                                                                                                                                                                   2001-218521/22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N
                                                                                                                                                                                                         PA,
                                                                                                                                                                                                                                 EVOLUTEC LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                           histacalin protein; antiinflammatory; antiallergic; logical; allergic rhinitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Page
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IQAEFLEMNNADTNMQFATEKVTAVKMYGYNRENAFRYETED---GQVFTDVIAYSD-DNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                         Paesen
                                                                                                                                                                                                                                                                               2000WO-GB03287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5-6;
                                                                                                                                                                                                                                                         99GB-0020673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          19pp;
                           conjunctivitis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein;
                                                                                                                                                                                                         90
                                                                                                                                                                                                                                                                                                                                                                                                                                       entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       33.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 331.5;
Pred. No. 3.6e
29; Mismatches
                                                                                                           English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ŗ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       331.5;
No. 3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .6e-26;
tes 62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length
                                    seasonal and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                          present
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          7
```

Sequence

ξ

fluids

ds or cell culture supernatants, allergens; (ii) for binding VA,

e.g.

monitor remove }

```
RESULT 7
AAW37447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                   female-specific histamine binding protein 2 (FS-HBP2). Its amino acid sequence was deduced from a cDNA clone (see AAW00228) obtained from a salivary gland cDNA library. FS-HSP1 (see AAW37446) and male-specific HSP1 (see AAW37448) and a related protein, D.RET6 (see AAW37449) from Dermacenter reticularis, were also identified. These novel vasoactive amine binding proteins (VABPs) can be expressed in host cells using e.g. a baculovirus expression system. They can be used: (i) to assay histamine (or other VA such as serotonin) in be used: (i) to assay histamine (or other VA such as serotonin) in
                                                                                                                  This protein comprises tick Rhipicephalus appendiculatus female-specific histamine binding protein 2 (FS-HBP2).
                                                                                                                                                                                   New vasoactive amine binding proteins and related nucleic vectors - transformed cells and transgenic animals, used f assaying or removing histamine and as antihistamine or anti-inflammatory agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            histamine; serotonin; assay; insect bite; snake bite; sco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Tick vasoactive
                                                                                                                                                          Example
                                                                                                                                                                                                                                                                                                                    (OXFO-) OXFORD VACS LTD
                                                                                                                                                                                                                                                                                                                                               18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                                       19-MAY-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                 27-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                            WO9744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   transgenic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Female-specific vasoactive amine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             08-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAW37447
                                                                                                                                                                                                                                                                  1998-018506/02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60
                                                                                                                                                          2;
                                                                                                                                                                                                                                                                                           PA,
                                                                                                                                                                                                                                                      AAV00228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETED---GQVFTDVIAYSD-DNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKS
                                                                                                                                                          Fig 2; 44pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 animal; tick.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       appendiculatus
                                                                                                                                                                                                                                                                                                                                               97GB-0007844
96GB-0010484
                                                                                                                                                                                                                                                                                                                                                                                      97WO-GB01372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                amine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /label= Sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Protein;
                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      33.5%;
                                                                                                                                                          English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               scorpion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              mine binding protein 1; FS-HCP1;
antihistamine; anti-inflammatory;
rpion bite; dermatitis; vaccine;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 331.5;
Pred. No. 3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FS-HBP2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .6e-26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DΒ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                 (Ra) novel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11;
                                                              These
                                                                             (see
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
```

```
RESULT 8
ANY18079
ID ANY18
XX AAY1
AC AAY1
XX AAY1
AC AAY1
XX Hist
KW Ging
KW 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local S
Matches 74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             from blood, food, cell cultures etc.; (iii) as an antihistamine or anti-inflammatory agents, e.g. for treating insect, snake or scorpion bites or dermatitis, or as a carrier for slow release of histamine-related compounds; (iv) in vaccines to protect against metazoan parasites, especially in animals; (v) as reagents for studying inflammation, involvement of VA in ulcer formation or the immune response etc. VABBs provide a more sensitive assay for histamine than low-affinity antibodies currently used. They may also be more effective and safer than conventional antihistamines.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator;
This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine
                                                                                                                                   Claim
                                                                                                                                                                                   of allerg
                                                                                                                                                                                                                Histamine
                                                                                                                                                                                                                                                                                              WPI;
                                                                                                                                                                                                                                                                                                                                           Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                 26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAY18079;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAY18079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                              (OXFO-)
                                                                                                                                                                                                                                                                                        1999-357841/30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                                                                                                                ۲,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ผ
                                                                                                                                                                                                                                                                                                                                                                                              OXFORD
                                                                                                                                                                                                                                                                   AAX76965
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                F1g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IQAEFLEMNNADTNMQFATEKVTAVKMYGYNRENAFRYETED--GQVFTDVIAYSD-DNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDETCVGVMANDVNEDEKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                              and serotonin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  190 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first
                                                                                                                                                                                                                                                                                                                                           Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               appendiculatus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                              VACS
                                                                                                                                                                                                                                                                                                                                                                                                                                              98GB-0013917.
97GB-0025046.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98WO-GB03530
                                                                                                                                84pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein FS-HBP2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Protein;
                                                                                                                                                                                                                                                                                                                                           ရှ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       33.5%;
                                                                                                                                English.
                                                                                                                                                                                                           binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 331.5; DB 19;
Pred. No. 4.2e-26;
Pred. No. 4.2e-26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ectoparasite;
                                                                                                                                                                                                              compounds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ₹
                                                                                                                                                                                                              useful
                                                                                                                                                                                                                for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                              the
                                                                                                                                                                                                           treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  190;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            18
```

```
RESULT 9
AAB74288
ID AAB7
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used to regulate cellular growth and tissue repair. The molecules may
                          The present invention relates to the use of a histacalin protein for treating or preventing conjunctivitis. The present sequence is the histacalin protein FS-HBPI. The invention is particularly in the treatment of allergic or seasonal conjunctivitis.
                                                                                               Claim 4;
                                                                                                                                                                                                                                                                                                                                                                                            Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAB74288 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        used to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking
Sequence
                                                                                                                         preventing conjunctivitis, e.g. seasonal or conjunctivitis -
                                                                                                                                                    Use of histacalin proteins for treating or preventing conjunctivitis, or for manufacturing a medicament for
                                                                                                                                                                                                                                                                                01-SEP-1999;
                                                                                                                                                                                                                                                                                                            24-AUG-2000;
                                                                                                                                                                                                                                                                                                                                      08-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                  WO200115719-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                       Histacalin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Histacalin protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAB74288;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ectoparasites.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               20-JUN-2001
                                                                                                                                                                                                                                                     (EVOL-) EVOLUTEC LTD
                                                                                                                                                                                              2001-257675/26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                               Page 5-6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETED---GQVFTDVIAYSD-DNC
 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 190 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                       FS-HBP1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                           Paesen
                                                                                                                                                                                                                                                                                                            2000WO-GB03282
Ą
                                                                                                                                                                                                                                                                                99GB-0020674
                                                                                                                                                                                                                                                                                                                                                                                                                                                   FS-HBP1
                                                                                              19pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        33.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                       conjunctivitis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 331.5; DB 2
.Pred. No. 4.2e-26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ₹
                                                                                                                                       perennial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                       y non-infective
r treating or
l allergic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                           useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     18
```

Query Match Best Local Similarity

27 39

. . . 3 % *:

Score Pred.

267.5; DB 2 No. 1.6e-19;

22;

Length 172

밁

120 YVIYALGPDGSGAG-YELWAT-DYTDVPASCLEKFNEYAA---GLPVRDVYT-SDCLP 171

```
밁
                                                               Qy
                                                                                           맑
                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 10
AAB73260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QΥ
                                                                                                                                                    Matches
                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                            allergic rhinitis. The method involves employing a blood-feeding ectoparasite-derived (e.g. tick-derived) histacalin protein. The sequence is one such histacalin protein. The histacalin protein, useful for treating or preventing allergic rhinitis, both season perennial allergic conjunctivitis.
                                                                                                                                                                                                                                                                                                                                             Use of histacalin proteins for treating or preventing allergic rhinitis, or for manufacturing a medicament for treating or preventing rhinitis, e.g. seasonal or perennial allergic rhinitis
                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                              The present invention relates to a method for treating
                                                                                                                                                                                                                                                                                                                       Disclosure; Pages 4-6; 19pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-SEP-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FS-HBP1; histacalin protein; antiinflammatory; antiallergic; opthalmological; allergic rhinitis.
                                                                                                                                                                                                                                                                                                                                                                                                         WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          08-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO200116164-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Histacalin protein FS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                         (EVOL-) EVOLUTEC LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                24-AUG-2000; 2000WO-GB03287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAB73260;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAB73260 standard; protein; 172 AA
                                                                                                                                                               Local
120 DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP 177
                                                                                                                                                                                                                                                                                                                                                                                                       2001-218521/22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                         63
                                                                    60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60
                                                                                              ω
                                                                                                                                                   70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        70;
                                                                                                                                                               Similarity
                                      VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED---GQVLTDVLAFSD-DNC
                                                               LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                          PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN 62
                                                                                                         PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          YVIYALGPDGSGAG-YELWAT-DYTDVPASCLEKFNEYAA---GLPVRDVYT-SDCLP 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED--GQVLTDVLAFSD-DNC 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN 62
                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                      ă,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     99GB-0020673
                                                                                                                                                                                                                                                                                                                                                                                                                                  ရှ
                                                                                                                                                             27.0%;
                                                                                                                                                 20;
                                                                                                                                               Score 267.5;
Pred. No. 1.6e
20; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                               ..6e-19;
nes 77;
                                                                                                                                                                          DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     77;
                                                                                                                                                                         22;
                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                         Length
                                                                                                                                                                                                                                         lin protein, is both seasonal
                                                                                                                                                                          172;
                                                                                                                                                                                                                                                                                            preventing
                                                                                                                                                11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11;
                                                                                                                                                                                                                                                                                                                                                            preventing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                   present
                                                                                                                                                                                                                                         and
                                                                                                                                                7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7;
```

Ş

Query Match Matches

Local

Similarity 70; Conserv

Conservative

20;

27.0%;

Score 267.5; Pred. No. 1. Mismatches

l.8e-19; nes 77; DB 19;

Indels Length

11;

Gaps

7;

190;

Sequence

```
RESULT 11
AAW37446
                                            anti-inflammatory agents, e.g. for treating insect, snake or scorpion bites or dermatitis, or as a carrier for slow release of histamine-related compounds; (iv) in vaccines to protect against metazoan parasites, especially in animals; (v) as reagents for studying inflammation, involvement of VA in ulcer formation or the immune response etc. VABPs provide a more sensitive assay for histamine than low-affinity antibodies currently used. They may
                                                                                                                                                                 from a salivary gland cDNA library. FS-HSP2 and male-specific HSP1 (see AAW37447-48) and a related protein, D.RET6 (see AAW37449) from Dermacenter reticularis, were also identified. These novel vasoactive amine binding proteins (VABPs) can be expressed in host cells using e.g. a baculovirus expression system. They can be used: (1) to assay histamine (or other VA such as serotonin) in body fluids or cell culture supernatants, e.g. to monitor the effect of allergens; (11) for binding VA, e.g. to remove histamine from blood, food, cell cultures etc.; (11) as an antihistamine or
                                  also be more effective and
                                                                                                                                                                                                                                                                                                                                                                                                                                          New vasoactive amine binding proteins and related nucleic vectors - transformed cells and transgenic animals, used f assaying or removing histamine and as antihistamine or
                                                                                                                                                                                                                                                                                                                         This protein comprises tick Rhipicephalus appendiculatus (Ra) novel female-specific histamine binding protein 1 (FS-HBP1). Its amino acid sequence was deduced from a cDNA clone (see AAV00227) obtained
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 1998-018506/02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 histamine; serotonin; assay; antihistaminė; anti-inflammatory; insect bite; snake bite; scorpion bite; dermatitis; vaccine; transgenic animal; tick.
                                                                                                                                                                                                                                                                                                                                                                                             Example 2; Fig 1; 44pp;
                                                                                                                                                                                                                                                                                                                                                                                                                               anti-inflammatory agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            W09744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         08-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAW37446;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAW37446 standard; Protein; 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (OXFO-) OXFORD VACS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         18-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          18-APR-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            19-MAY-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Female-specific vasoactive amine binding protein 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tick vasoactive amine binding protein 1 FS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         97GB-0007844.
96GB-0010484.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            97WO-GB01372.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /label= Sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LTD
                                                                                                                                                                                                                                                                                                                                                                                             English.
                                  safer than
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           B
                                  conventional antihistamines
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FS-HCP1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   acid
                                                                                  or the
```

```
AAV1189
AAV118
XX
AAV189
AC AAV18
AC AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ₽ %
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ş
        Query Match
Best Local Similarity
Matches 70; Conserv
                                                                                                                                                                                       This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used as components of vaccines directed against blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator; tissue repair; blood-sucking ectoparasite; therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Histamine and of allergies
                                                                                                               Sequence
                                                                                                                                                                      ectoparasites
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 1; Fig 1; 84pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (OXFO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               W09927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAY18078 standard; Protein; 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1999-357841/30.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OXFORD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAX76964
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      YVIYALGPDGSGAG-YELWAT-DYTDVPASCLEKFNEYAA---GLPVRDVYT-SDCLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN
                                                                                                                  190
        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Paesen GC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              serotonin binding compounds useful for the treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    appendiculatus
                                                                                                                  ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VACS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          98GB-0013917.
97GB-0025046.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          protein FS-HBP1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LTD
                                    27.0%;
39.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      serotonin binding compound; inflammation;
        Score 267.5;
Pred. No. 1.8e
20; Mismatches
           20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ₹
1.8e-19;
77;
                                                             DΒ
                                                             20;
           Indels
                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -GQVLTDVLAFSD-DNC
                                                             190;
        11;
        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            59
        7;
```

```
RESULT 13
AAY18086
ID AAY18
AX ASTER
AX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                   library. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking ectoparasites.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator; tissue repair; blood-sucking ectoparasite; therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           of allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Histamine and serotonin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 1999-357841/30
N-PSDB; AAX76971.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Boophilus microplus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Histamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAY18086
                                                                                                                                                                                                                                                                                                                                                                                                    This sequence is an example of a histamine or serotonin binding compound (A), of the invention. cDNA encoding this sequence was in from a mixed Boophilus microplus/Ixodes hexagonus cDNA expression
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Nuttall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (OXFO-) OXFORD VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   hexagonus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ŋ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           YVIYALGPDGSGAG-YELWAT-DYTDVPASCLEKFNEYAA----GLPVRDVYT-SDCLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED--GQVLTDVLAFSD-DNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Fig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                binding protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        98GB-0013917
97GB-0025046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein Ih/Bm-HBP2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                serotonin binding compound;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           compounds useful for the treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ₿
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                inflammation;
                                                                                                                                                                                                                                                                                                                                                                                                                                    isolated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      59
```

Sequence

```
RESULT 14
AAY18085
ID AAY18
XX AAY18085
XX AAY18085
XX AAY18085
XX AAY18
XX AAY18
XX Hist
XX Hist
XX Hist
XX Gree
Hist
XX Hist
XX Hist
XX Gree
Hist
XX Free
Hist
XX Free
Hist
XX Free
Hist
XX Gree
Hist
XX Free
Hist

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                    This sequence is an example of a histamine or serotonin binding compound (A), of the invention. cDNA encoding this sequence was isolated from a mixed Boophilus microplus/Ixodes hexagonus cDNA expression library. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used to regulate cellular growth and tissue repair. The molecules may also be used as components of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Histamine and serotonin binding compounds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nuttall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (OXFO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Boophilus microplus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    tissue repair;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Histamine binding protein; serotonin binding compound; inflammation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY18085
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1999-357841/30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             119
                                                                                                                                                                                                                                                                                                                                                                                                                                        13; Fig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             nexagonus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAX76970
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PΑ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OXFORD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TWHNOT-LGRYQDAWKSINQSVGTTYYFLRSTYNNDSVWGKNFTCLSVTVTSKYESTFTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTA----EKIGKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDVLYIPYKEDG-----YELWVRSEYLQNTPTCCQFIFDLVA--LGRTTYNIST 194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CDVIFVP-KERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EYNTT - - YKNQSQQWVSMS - ENVTAVQEGGYSVKNIIQWTTE - - NNTKFNDTVVFTDGQT 147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KLNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKN 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first
                                                                                                                                                                                                                                                                                                                                                                                                                                           7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VACS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       98GB-0013917.
97GB-0025046.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 blood-sucking ectoparasite; therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                  84pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein Ih/Bm-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27.0%;
36.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                        English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 267; DB 20;
Pred. No. 2.2e-19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         useful for the treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 203;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                80
```

```
RESULT 15
AAW37449
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SX
XX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                                                New vasoactive amine binding proteins and related nucleic vectors - transformed cells and transgenic animals, used assaying or removing histamine and as antihistamine or
                                                                                      anti-inflammatory agents
                                                                                                                                        N-PSDB;
                                                                                                                                                                     Nuttall PA, Paesen
                                                                                                                                                                                                                                                                                                                    Key
                                                                                                                                                                                                                                                                                                                                                                    Vasoactive amine binding protein; D.RET6; histamine; serotonin; assay; antihistamine; anti-inflammatory; insect bite; snake bite;
                                                                                                                                                                                                                                                                                                                                                                                                 Tick vasoactive amine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAW37449 standard; Protein; 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
                                                                    Example
                                                                                                                                                                                       (OXFO-) OXFORD VACS LTD
                                                                                                                                                                                                           18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                        19-мау-1997;
                                                                                                                                                                                                                                                            27-NOV-1997
                                                                                                                                                                                                                                                                              WO9744451-A2
                                                                                                                                                                                                                                                                                                          Peptide
                                                                                                                                                                                                                                                                                                                                        Dermacenter
                                                                                                                                                                                                                                                                                                                                                            scorpion
                                                                                                                                                                                                                                                                                                                                                                                                                      08-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                         AAW37449;
                                                                                                                                                 1998-018506/02.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    65; Conserv
                                                                   2
                                                                                                                                        AAV00230
                                                                                                                                                                                                                                                                                                                                                            bite;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           YNIST 194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KKKLNATILYKN-----KHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTF 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTA----EKIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RNVYT 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TVEYNTT--YKNQSQQWVSMTENVTAVQE--EGYDVKNIIQWTTENNTK-----F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NDTVVFTDGQTCDLLYIPYKENG----YELWVRSDYLQNTPTCCQFIFDLVA--LGRTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EDVFVFSDYKNCDVIFVP-KERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTV 166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NTTW-HSKELKNYQDAWKSINQNVSTTYYFLRSTYNNDSVWGKNFTCLSVTVTSKHESTF
                                                                  Fig 4; 44pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             203 AA;
                                                                                                                                                                                                                                                                                                                                        reticularis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                           97GB-0007844
96GB-0010484
                                                                                                                                                                                                                                                                                                                                                            dermatitis;
                                                                                                                                                                                                                                        97WO-GB01372
                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                /label= Sig_peptide
                                                                                                                                                                     GC;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               26.6%;
35.1%;
                                                                   English
                                                                                                                                                                                                                                                                                                                                                           vaccine; transgenic animal; tick.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                 protein D.RET6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               263;
No. 5.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 20;
.8e-19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     57;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                           for
                                                                                                                    acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              90
```

sequence was deduced aron. In Novel vaces, acception a Dr salivary gland cDNA library. 3 Novel vaces, acception a Dr salivary gland cDNA library. 3 Novel vaces, acception and MS-HBP1 (see AAW37446-48), of the tick FS-HBP1, FS-HBP2 and MS-HBP1 (see AAW37446-48), of the tick FS-HBP1, FS-HBP2 and MS-HBP1 (see AAW37446-48), of the tick FS-HBP1, FS-HBP2 and MS-HBP1 (see AAW37446-48), of the tick FS-HBP1, FS-HBP2 and MS-HBP1 (see AAW37446-48), of the tick FS-HBP1, FS-HBP2 and MS-HBP1 (see AAW37446-48), of the tick FS-HBP1, FS-HBP2 and MS-HBP1 (see AAW37446-48), of the tick FS-HBP1, FS-HBP2 and MS-HBP1 (see AAW37446-48), of the tick FS-HBP1, FS-HBP2 and MS-HBP1 (see AAW37446-48), of the tick FS-HBP1, FS-HBP2 and MS-HBP1 (see AAW37446-48), of the tick FS-HBP1, FS-HBP2 and MS-HBP1 (see AAW37446-48), of the tick FS-HBP1 (see AAW37446-48). This protein comprises tick Dermacenter reticularis (Dr) novel vasoactive amine binding protein (VABP) D.RET6. Its amino acid sequence was deduced from a CDNA clone (see AAV00230) obtained from a Dr salivary gland cDNA library. 3 Novel VASPs, designate

designated

```
Search completed: August 1, 2003, 12:22:49 Job time: 57.5067 secs
                                                                                              밁
                                                                                                                                  Š
                                                                                                                                                                                밁
                                                                                                                                                                                                                         इ
                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VABPs can be expressed in host cells using e.g. a baculovirus cexpression system. They can be used: (i) to assay histamine (or other VA such as serotonin) in body fluids or cell culture supernatants, e.g. to monitor the effect of allergens; (ii) for binding VA, e.g. to remove histamine from blood, food, cell cultures etc.; (iii) as an antihistamine or anti-inflammatory agents, e.g. for treating insect, snake or scorpton bites or dermatitis, or as a carrier for slow release of histamine-related compounds; (iv) in vaccines to protect against metazoan parasites, especially in animals; (v) as reagents for studying inflammation, involvement of VA in ulcer formation or the immune response etc. VABPs provide a more sensitive assay for histamine than low-affinity antibodies currently used. They may also be more effective and safer than conventional antihistamines.
                                                                                                                                                                                                                                                                                                                                                                    Query Match 25.4%; Score 251.5; DB 19; Length 209; Best Local Similarity 35.3%; Pred. No. 9.3e-18; Matches 61; Conservative 29; Mismatches 66; Indels 17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                         88 EDYTVTSVFTFRNAS-SPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNIT--DTLI 144
                                                                                                                                                                                                                                                                              30 NPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQV--QEIERKE 87
                                                                                                                                                                                                                                                                                                   1 NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTD-GVWGEEFTCVSVTAEKIGKKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     209 AA;
                                                                                                                                                                                                                                                                                                                                                                       Gaps
```

THIS PAGE BLANK (USPTC)

•

```
Minimum
Maximum
                                                                                                                                                                                                                                                                                                                                     Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No. 18 the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 0
                                                                                                                                                                                                                    114.5
104.5
103
97
                                                                                                                                                                                                                                                                                                                                       Score
      96.5
92.5
91.5
91.5
91.5
91.5
91.5
91.5
89.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               length: 0 length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BLOSUM62
                                                                                                                                                                                                                                                                                                                                     Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              830525 seqs,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            August 1, 2003, 12:15:04; Search time 49:1829 Seconds
                                                                                                                                                                                                                                                                                                                                                          Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-087-195-7
        SPTREMBL_23:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NQPDWADEAANGAHQDAWKS.....FNEYAVGRETRDVFTSACLE 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sp_virus:*
sp_vertebrate:*
sp_unclassified:*
sp_rvirus:*
sp_bacteriap:*
sp_archeap:*
      667778888934
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sp_archea:*
sp_bacteria:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sp_organelle:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sp_mhc: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sp_invertebrate:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sp_human:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sp_fung1:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sp_phage:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sp_plant:*
sp_rodent:*
                                                                                                                                                                                                                                                                                                                                     Length DB
      209
311
1898
1590
1590
1449
944
176
221
386
640
306
450
1083
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                258052604 residues
      Q95WZ5
Q8XP49
Q9GEV3
Q8MVC3
Q8PQ49
Q8I3G1
Q9P378
                                                                                                                                                         Q9GSZ7
Q9HE41
Q8I9T9
                                                                                                                                                                                                                  Q8IL35
Q59983
Q55263
                                                                                                                                                                                                                                                                           Q8WSK7
Q8MVC2
                                                                                                                                                                                                                                                                                                                                     ü
                                                                                                                                                                                                                                                                                                                                                                                                SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (without alignments)
897.203 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         830525
OBmvc2 ixodes scap
OB1135 plasmodium
OS9983 streptococc
Q55263 streptococc
Q9987 plasmodium
O9he41 neurospora
O819t9 ornithodoro
O95wz5 ixodes scap
O95wz5 ixodes scap
O95w25 ixodes scap
O99649 clostridium
O9gev3 lysimachia
OBmvc3 ixodes scap
O99949 ureaplasma
O81391 plasmodium
O9p378 schizosacch
O9aqz5 oryza sativ
                                                                                                                                                                                                                                                                                             Q8wsk7 dermacentor
                                                                                                                                                                                                                                                                                                                                   Description
                                                                                                                                                                                                                                                                                                                                                                                                                  . :
                                                                                                                                                                                                                                                                                                                                                    RESULT 1
QBWSK7
QBWSK7
QBWS
AC QBWS
AC QBWS
DT 01-W
DT
```

 $\begin{array}{c} 117 \\ 127 \\$

ALIGNMENTS

OBWSK7 PRELIMINARY; PRT; 209 AA.

OBWSK7;
O1-MAR-2002 (TREMBLrel. 20, Created)
O1-MAR-2002 (TREMBLrel. 20, Last sequence update)
O1-JUN-2002 (TREMBLrel. 21, Last annotation update)
Serotonin and histamine binding protein.
Dermacentor reticulatus.
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida;
Parasitiformes; Ixodida; Ixodidae; Dermacentor.

NCBI_TaxID-57047;

	CAKDRKTYDIFNEECV 202	150 LCDVEYVPNADQGCELMVKKSHYKHVPDYCTFVFNVFCAKDRKTYDIFNEECV 202	b		
	-AVGRETRDVFTSACL 170	118 N	γo		
149	EYQVGGGLNITDTLIFTDGE		. Db		
117	RYETEDGQVFTDVIAYSD-D	9 62 SIQAEFLEMNNADTNMQFATEKVTAVKMYGY-NRENAFRYETEDGQVFTDVIAYSD-D 117	νo		
90	WGSQFKCLQVQEIERKEEDY	31 PLWAHEELLGKYQDAWKSIDQGVSVTYYLAKTTYENDTGSWGSQFKCLQVQEIERKEEDY 90	Db		
13	WGNDFTCVGVMANDVNEDEK (ω	ОУ		
8;	Indels 12; Gaps	Best Local Similarity 37.5%; Pred. No. 5.2e-17; Matches 66; Conservative 29; Mismatches 69; Indels 12; Gaps			
	ength 209;	Query Match 30.1%; Score 282; DB 5; La			
	RC64;	Q SEQUENCE 209 AA; 23889 MW; E5EB8BE710859591 CRC64;	SC		
		R Pfam; PF02098; His_binding; 1.	<u> </u>		
		R Thtorneo Inpopped ALS6644.1;	2 0		
	abases.	L Submitted (DEC-1999) to the EMBL/GenBank/DDBJ databases	RI	. :	
		T by blood-feeding ticks.";	75		
	lipocalin secreted	T "A high affinity serotonin- and histamine-binding lipocalin secreted	R		
			<u>-</u>		
		P SEQUENCE FROM N.A.	RP R		

```
日
                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QΨ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                   MEDLINE-2225705; PubMed=12368864; Gardner M.J., Hall N., Fung E., White O., Berriman M., Hyman R.W., Carlton J.M., Pain A., Nelson K.E., Bowman S., Paulsen I.T., James K. Eisen J.A., Rutherford K., Salzberg S.L., Craig A., Kyes S., Chan M.-S., Nene V., Shallom S.J., Suh B., Peterson J., Angluoli S., Chan M.-S., Nene V., Shallom S.J., Suh B., Peterson J., Angluoli S., Pertea M., Allen J., Selengut J., Haft D., Mather M.W., Valdya A.B., Martin D.M.A., Fairlamb A.H., Fraunholz M.J., Roos D.S., Ralph S.A., McFadden G.I., Cummings L.M., Subramanian G.M., Mungall C., Venter J.C., Carucci D.J., Hoffman S.L., Newbold C., Davis R.W., Fraser C.M., Barrell B.,
                                                                                                                                                                                                                                                                                 O8IL35

O8IL35;

O1-MAR-2003 (TrEMBLrel. 23,

O1-MAR-2003 (TrEMBLrel. 23,

O1-MAR-2003 (TrEMBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OBMVC2:
01-OCT-2002 (TrembLrel. 22, Created)
01-OCT-2002 (TrembLrel. 22, Last sequence update)
01-OCT-2002 (TrembLrel. 22, Last annotation update)
01-OCT-2002 (TrembLrel. 22, Last annotation update)
Putative secreted histamine binding protein.
Ixodes scapularis (Black-legged tick) (Deer tick).
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari;
                                                                                                                                                                                                               Plasmodium falciparum Eukaryota; Alveolata; NCBI_TaxID=36329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRAIN-Rhode Island; TISSUE-Salivary Valenzuela J.G., Francischetti I.M., Mather T.N., Ribeiro J.M.C.; "Exploring the Sialome of the Tick Ve scapularis.";
                                                                                                                                                                                                                                                         Hypothetical PF14_0414.
              falciparum."
                          "Genome sequence
                                                                                                                                                                             STRAIN-3D7
                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NCBI_TaxID=6945;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Parasitiformes; Ixodida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q8MVC2
                                                                                                                                                                                                                                                                                                                                                                   w
                                                                                                                                                                                                                                                                                                                                                                                                            202
                                                                                                                                                                                                                                                                                                                                                                                                                                     137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              tted (FEB-2002) to the ENAF483718; AAM93640.1; -
NCE 311 AA; 36581 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        31
419:498-511(2002)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                    WTTD 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VNEDEKSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENA-----
                                                                                                                                                                                                                                                                                                                                                                                                            WLSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                             NLNFNFLCESGGCRIHHQECWQKRWTKYSEKYVLFSTPLC---YVVRSLQDDEGYESCEF 201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ---FRYETEDG--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LNYTLKSANYTSKWYNRTSKRMNSSTQYVQAAKQKYYSIENIMHLGQPQREVTSPNGTCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NNPD-LNRKDLGAMQDAWRTIKFTANHSYYLIYSS-----GWGTREHYEDVRCLQVHSSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWG-----NDFTCVGVMAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRELIMINARY;
                                                                                                                                                                                                                                                                      protein,
                                                                                                                                                                                                                                                                                                                                                                                                            205
                          the human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        12.2%;
                                                                                                                                                                                                                              Apicomplexa;
                                                                                                                                                                                                                                              (isolate 3D7).
                                                                                                                                                                                                                                                                       conserved
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   of the Tick Vector of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ixodidae; Ixodes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26;
                                                                                                                                                                                                                                                                                 Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                               Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 114.5;
Pred. No. 0.0
                         malaria
                                                                                                                                                                                                                                                                                                                                        PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               D7E529FEFE4CFA9A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                             Haemosporida; Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -QVFTDVIAYSDDNCDVIYVPGTDGNEEGY---EL
                                                                                                                                                                                                                                                                                                                                        1898
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gland;
Pham V.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         311
                         parasite
                                                                                                                                                                                                                                                                                                                                        À
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                 on update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Lyme Disease,
                          Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Garfield
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ixodes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                    .
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               97
```

```
10 259983
1D 059983
1D 059983
2C 059983
2C 059982
2C 059982
2C 05982
2C 059
밁
                               δÃ
                                                                                      DЪ
                                                                                                                               δÃ
                                                                                                                                                                                 Вр
                                                                                                                                                                                                                     Qγ
                                                                                                                                                                                                                                                                          B
                                                                                                                                                                                                                                                                                                                   ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SQ
                                                                                                                                                                                                                                                                                                                                                                   Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DNA Seq. 4:19-27(1993).

EMBL; D13858; BAA02976.1;
InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.

Pfam; PF01473; CW_binding_1; 16.

Pfam; PF02324; Glyco_hydro_70; 1.

Glycosyltransferase; Signal; Transfera
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; AE014823; AAN37027.1;
Hypothetical protein.
SEQUENCE 1898 AA; 223829
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sato S., Inoue M., Handa N., Aizawa Y., 1 "DNA sequence of the glucosyltransferase Streptococcus sobrinus.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-NOV-1996 (TrEMBLrel. 01, Created)
01-NOV-1996 (TrEMBLrel. 01, Last sec
01-CCT-2002 (TrEMBLrel. 22, Last and
Glucosyltransferase-I precursor (EC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Streptococcus.
NCBI_TaxID=1310;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A. STRAIN=OMZ176;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Streptococcus sobrinus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q59983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=94146405; PubMed=8312602;
                                                                                                                                                                                                                                                                                                                                                                                         Local
                                             139
490
                                                                                           449
                                                                                                                                                                                    395
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    624
                                                                                                                                                                                                                                                                             335 QPQWNGESEKPYDDHLQNGALLFDNQTDLTPDTQSNYRLLNRTPTNQTGSLDSRFTYNPN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          571 AWKNSSYLVEE---YCKSKYENKKDKLIIDNYDNSLFT--HIYSN--NHDSKEEQSNFFF
                                                                                                                                      87
                                                                                                                                                                                                                                 39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          17
                                                                                                                                                                                                                                                                                                                                                                   l Similarity
52; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      44;
                                                                                                                                                                                                                                                                                                                      2 QPDW------KATYK-N 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                      VKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCDVIYVPGTDGNEEG---
                                                                                                                                                                                 DPLGGYDF----LLANDVDNSNPVVQAEQLNWLHYLLNFGSIYANDADAN--FDSIRVDA
                                                                                                                                                                                                                               DPVWGNDFTCVGVMANDVNEDEKSIQAEFL----
NDTPYLHDDGDNL-MNMDNKF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IYDN-KIVLNDFYKGIQTLFKKKYYDYDNIFSVCINNYRQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SDDNCDVIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNE 154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HNNANSSYYTFDTDTSENF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MNNA - - - - -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AWKSLKADVENVYYMVKATYKN-----DPVWGNDFTCVGVMANDVNEDEKSIQAEFLF
                                           ------TDYDNIPANCLNKF
                                                                                                                                                                                                                                                                                                                                                                                                                                                            1590 AA;
                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               38
                                                                                                                                                                                                                                                                                                                                                                                      11.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11.28; 27.58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Signal; Transferase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 175955 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -DTNMQFATEKVTAVKMYGYNR--ENAFRYETEDGQVFTDVI----AY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Lactobacillales; Streptococcaceae;
                                                                                           -DNVDADLLQISSDYLKAAY--GIDKNNKNANNHVSIVEAWSD
                                                                                                                                                                                                                                                                                                                                                                   19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ¥.
                                                                                                                                                                                                                                                                                                                                                                 Score 103; DB Pred. No. 3.2; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GLUCOSYLTRANSFERASE-I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          POTENTIAL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 104.5;
Pred. No. 3;
                                           152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sequence update) annotation updat (EC 2.4.1.5).
                                                                                                                                                                                                                                                                                                                                                                                                                                                               C3C83A57CF3C2B0E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7B5CB02A7091822F CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -ISKYFYPRISYKKFSYDTFEGEKFDNLILGGMCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Isobe Y., Katayama
e gene of serotype
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene
                                                                                                                                                                                                                                                                                                                                                                                         .2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            update)
                                                                                                                                                                                                                                                                                                                                                                                                               2;
                                                                                                                                                                                                                                                                                                                                                                      54;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      56;
                                                                                                                                                                                                                               ----FMNNADTNMQFATEKVTA 86
                                                                                                                                                                                                                                                                                                                                                                                                               Length 1590;
                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length
                                                                                                                                                                                                                                                                                                                                                                      76;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      37;
                                                                                                                                      ---YELWT- 138
                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                 448
                                                                                                                                                                                                                                                                             394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             623
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      676
                                                                                                                                                                                                                                                                                                                                                                   12
```

¥

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            뭐
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                                                                                                                                                                                             Q55263; PRELIMINA
Q55263; O1-NOV-1996 (Tremblre
01-JAN-1998 (Tremblre
01-CCT-2002 (Tremblre
GTF-I,
GLUCOSYLTRANSFERASE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "DNA and amino-acid sequences of water-insoluble-glucan synthetase produced from Streptococcus sobrinus ATCC 33478.";
Ann. Kagoshima Univ. Dental School 16:23-29(1996).
EMBL; D63570; BAA09792.1; -.
InterPro; IPR002479; CW_binding.
InterPro; IPR00318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 15.
Pfam; PF01473; GLyco_hydro_70; 1.
SEQUENCE 1590 AA; 176058 MW; 9DF7A3F2C6E4FD43 CRC64;
                                                                                                  SEQUENCE FROM N.A.

STRAIN-K173;

Katrib M.T., Davies N.P., Stewart T.S.;

Katrib M.T., Davies N.P., Stewart T.S.;

Winique Insert Sequences Within Carbamoyl Phosphate Synthetase

"Unique Insert Sequences Within Carbamoyl Phosphate Synthetase

"Insert Sequences Within Carbamoyl Phosphate

"Inse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sato
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Streptococcus sobrinus. Bacteria; Firmicutes; L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Streptococcus.
NCBI_TaxID=1310;
    EMBL;
                                                                 ÷
                                                                                                                                                                                                                                                                      NCBI_TaxID=5821;
                                                                                                                                                                                                                                                                                            Plasmodium berghei.
Eukaryota; Alveolata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A. STRAIN-ATCC 33478;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              u
SIMILARITY).
SIMILARITY: BELONGS TO THE COPPER/TOPAQUINONE
L; AF286897; AAG10785.1; -.
                                                                 H(2)O(2).
COFACTOR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         449
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            395
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           335 OPOWNGESEKPYDDHLQNGALKFDNQSDLTPDTQSNYRLLNRTPTNQTGSLDSRFTYNAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ผ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QPDW-----ADEAANGAHQ-DAWKSLKADVENVYYMV------KATYK-N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCDVIYVPGTDGNEEG-----YELWT-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DPLGGYEF---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DPVWGNDFTCVGVMANDVNEDEKSIQAEFL-----FMNNADTNMQFATEKVTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NDTPYLHDDGDNL-MNMDNKF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----TDYDNIPANCLNKF 152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRELIMINARY;
                                                               BINDS 1 COPPER ION AND 1 TOPAQUINONE PER SUBUNIT (B)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -LLANDVDNSNPVVQAEQLNWLHYLLNFGSIYAKDADAN--FDSIRVDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Lactobacillales; Streptococcaceae;
                                                                                                                                                                                                                                                                                              Apicomplexa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -- DNVDADLLQISSDYLKAAY--GIDKNNKNANNHVSIVEAWSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 97;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                            Haemosporida; Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 1590;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              54;
                        OXIDASE FAMILY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                             amine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              76;
                                                                                                        NH(3)
                                                                                                                                                                                                                                                                                                                                                             oxidase)
                                                                                                                                                                        Η
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     38
```

```
RESULT 7
Q9HE41
                                                                    ACCOOC OCCOOC DITTO ACCOOC OCCOOC DITTO ACCOOC OCCOOC OCCO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S
Matches 37
                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
Schulte U., Aign V., Hoheisel J., Brandt P., F
Schulte U., Aign V., Hoheisel J., Brandt P., F
Nyakatura G., Mewes H.W., Mannhaupt G.;
Submitted (DEC-2000) to the EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                      Neurospora crassa.
Eukaryota; Fungi; Ascomycota; Pezizomycotina; Sordariales; Sordariaceae; Neurospora.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Copper;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRINTS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pfam; PF00289; CPSase_L_chain; 1.
Pfam; PF02786; CPSase_L_D2; 1.
Pfam; PF02787; CPSase_L_D3; 1.
Pfam; PF00117; GATase; 1.
                                                                                            InterPro; PROSITE; |
                                                                                                                                                         German Neurospora genome pr
Submitted (NOV-2001) to the
EMBL; AL451014; CAC18173.2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Related to importin B9B15.030.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-MAR-2001 (TrEMBLrel.
01-DEC-2001 (TrEMBLrel.
01-OCT-2002 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro; IPR001317; CPS_GATas:
InterPro; IPR000269; CuNH_oxid
InterPro; IPR000991; GATase_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PROSITE; PS00867; CPSASE_2; Copper; Oxidoreductase; TPQ.
                                                                    SEQUENCE
                                                                                                                                    HSSP; Q92973;
                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                      NCBI_TaxID=5141;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q9HE41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q9HE41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRINTS; PRO0096; GATASE.
PROSITE; PS01164; COPPER_AMINE_OXID_1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HSSP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1368 DNCYSSYSI 1376
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         P00968; 1CS0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PR00098; CPSASE.
PR00099; CPSGATASE.
                                                                  2973; 1QBK.
; IPR001494; Importinb_N.
PS50166; IMPORTIN_B_NT;
944 AA; 104908 MW; B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NNNRMISKNNNNLINSYNDDNKSDCFSELSYIQNHKKNINDIENDY----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NNDNKSEVIKSSKNFANSTNSKCEYINSNKEKAKKINYNDENTMVYNTNEQEENENKSLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NEDEKS -- IQAEFLEMNNADINMQFATEKVTAVKMYGYNRENAFRYETEDGOVFTD----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEDEENNVNPD--KSMRMDDNRGNINNIANNSYYI-----RDSVYNNEYK-INKMRELI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADEAANGAHQDAWKSLKAD------VENVYYMVKATYKNDPVWGNDFTCVGVMANDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LNKFNEYAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ------VIAYSDDN-----CDVIYVPGTDGN----EEGYELWTTDYDNIPANC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IPR005483; CPase_L.
IPR005479; CPase_L_D2.
IPR005480; CPase_L_D3.
IPR005481; CPase_L_N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1449 144
1449 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1449
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                rel. 16, Created)
rel. 19, Last sequence update)
rel. 22, Last annotation update)
beta-2 subunit (Transportin).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         10.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            167415 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CuNH_oxidase.
9.98;
                                                                                                                                                                               the EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GATase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    36;
Score 92.5;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 96.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                  B5C48DCAE470D5EF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CC72C27C72077F6B CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       944
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DΒ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Çī
                                                                                                                                                                                                                                                                                                                   Fartmann
                                                                                                                                                                                   databases
                                                                                                                                                                                                                                                                         databases
                                                                                                                                                                                                                                                                                                                                                                                                                                     Sordariomycetes,
                                                                    CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 1449;
                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                   В.,
                                                                                                                                                                                                                                                                                                                        Holland
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -GYEDLYSGS 1367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  110
```

Query Match

DB

ω,.

Best Local Similarity

밁 δ ₽ γQ 밁 ρy

147

```
RESULT
10 5W25
AC QI
DT 0
DT 0
DT 0
DT 0
OC 1
OC 1
RR
RR
RR
RR
RR
RR
RR
RR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QB19T9
ID 9T9
ID 9T9
AC 08
AC 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q819T9
Q819T9;
Q1-MAR-2003
Q1-MAR-2003
Q1-MAR-2003
 Das S., Bar
Fikrig E.;
"Salp25D, a
                                                                                          Ixodes scapularis (Black-legged tick) (Deer tick). Eukaryota; Metazoa; Arthropoda; Chelicerata; Arach Parasitiformes; Ixodida; Ixodidae; Ixodes. NCBI_TaxID=6945;
                                                                                                                                                                         HBP
                                                                                                                                                                                                      01-DEC-2001 (TrEMBLrel. 19,
01-DEC-2001 (TrEMBLrel. 19,
01-OCT-2002 (TrEMBLrel. 22,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FACE.
TISSUE-Salivary gland;
TISSUE-Salivary gland;
MEDLINE-21317941; PubMed-11425229;
Mans B.J., Venter J.D., Vrey P.J., Louw A.I.,
Mans B.J., Venter J.D., Prey P.J., Involved
                                                                                                                                                                                                                                                                  Q95W25;
                                                                                                                                                                                                                                                                                     Q95WZ5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ornithodoros savignyi.
Eukaryota; Metazoa; Arthr
Parasitiformes; Ixodida;
NCBI_TaxID-69826;
                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                       Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Identification of putative proteins tick salivary glands,"; Electrophoresis 22:1739-1746(2001). EMBL; AF452891; AAN76831.1; -. SEQUENCE 176 AA; 19375 MW; 44B755
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TSGP4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                              122
                                                                                                                                                                                                                                                                                                                                                                                                                118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 Similarity
45; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4
                                    Banerjee G.,
                                                                                                                                                                                                                                                                                                                                                                            GCNILQMKTSPFPGK-----CELWAPEGKAKNVESSCSGKFKELCGDAVETPYAEG
                                                                                                                                                                                                                                                                                                                                                                                                            NCDVIYV----PGTDGNEEGYELWTTD--YDNIPANCLNKFNE----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QAEFLFMNNADTNMQFA-----TEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDD- 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DFA-HAAN----DVWNVLKGS-DSKFLMVKRTYER-----GANKCVYMKRTSMDESSHTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKSI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDV----IYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRD--
                                                                                                                                                                                                                                                                                                                                                                                                                                                 EV-LMGYSKAGTTTDFVEPSKYTVTATSEGASTYNMMTVRRGPASHGVKFE--LVYSDDQ 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DDLEDGEIDDSESEGDENPDEKWT - - -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DEKSIQAEFLEMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDN 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DLATEAAEFWLTVGEHDNLWRALEPYITDIIPVLLECMVYSP---EDIAILGGASDDEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DWADEAAN-----GAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNE
   an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3 (TrEMBLrel.
3 (TrEMBLrel.
3 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
   Ixodes
                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -----EEDIKPQFAKKKLTRAA-----NGNTAADMAKNGNAFEKVASMEEDD
                                                                                                                                                                                        protein.
   scapularis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Arthropoda; Chedida; Argasidae;
                                        DePonte
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9.8%;
25.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    23,23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   23;
                                                                                                                                                                                                  Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 92; DB 5
Pred. No. 1.9;
23; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Created)
Last sequence up
Last annotation
                                      ×.
                                                                                                                                                                                                                                                                                   PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           44B7559F3BCB6A25
 antioxidant,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chelicerata; Arachnida; dae; Ornithodoros.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                      Marcantonio N.,
                                                                                                                                                                                                                                                                                 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            176 AA
                                                                                                                                                                                                                                                                                 Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -LRKCSAAALDVFARDFGGPVFTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5;
   S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 67;
                                                                                                                                 Arachnida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Neitz A.W.;
in granule
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CRC64;
                                      Kantor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
   of.
                                        F.S
                                                                                                                                 Acari;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Acari;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            biogenesis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            41;
                                                                                                                                                                                                                                                                                                                                                                                                                -YAVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -VFTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                            172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              385
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 12;
Q9GEV3
ID QS
AC QS
                                                                                                                                            Ş
                                                                                                                                                                                   밁
                                                                                                                                                                                                                   ρV
                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                             Q
                                                     RESULT 11
                                                                                                             뮹
                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACC OCC OCC DITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT
Q8XP49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Q9GEV3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Proc. Natl. Acad. Sci. U.S.A. 99:96-1001(2002).
EMBL; AP003185; BAB79822.1; -
Hypothetical protein; Complete proteome.
SEQUENCE 386 AA; 44316 MW; F06209C2465839D6 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Shimizu T., Ohtani K., Hirakawa H., Ohshima K., Yamas Shiba T., Ogasawara N., Hattori M., Kuhara S., Hayash "Complete genome sequence of Clostridium perfringens, flesh-eater";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bacteria; Firmic Clostridium. NCBI_TaxID-1502;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Clostridium perfringens.
Bacteria; Firmicutes; Clostridia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-MAR-2002 (TrEMBLrel. 20, C
01-MAR-2002 (TrEMBLrel. 20, L
01-CCT-2002 (TrEMBLrel. 22, L
Hypothetical protein CPE0116.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    immunodominant antigens in engorged tick salivary glands.";
J. Infect. Dis. 184:0-0(2001).
EMBL; AF209913; AR407816.1; -.
SEQUENCE 221 AA; 25359 MW; 7B995AC9COAFA252 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CPE0116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q8XP49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q8XP49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10
                                                                                                                                                                                                                                                                                                                                                                                                                              Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local
                                                                                                             329
                                                                                                                                                161
                                                                                                                                                                                     270
                                                                                                                                                                                                                       112
                                                                                                                                                                                                                                                                                                                                     157
                                                                                                                                                                                                                                                              217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   103
                                                                                                                                                                                                                                                                                                                                                                        14
                                                                                                                                                                                                                                                                                                64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity 24.3
32; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTQIYRVYYPSC
                                                                                                             RNEIY 333
                                                                                                                                                  TRDVF 165
                                                                                                                                                                                     NSSSNDKVDNIY-SFTNENPSKFSGNIYDYPYDFIMPYSNSSYLSASDLSKYNKSTLALM
                                                                                                                                                                                                                       IAYSDDNCDVIYVPGTDGNEEGY -- ELWTTDYDNI-----PANCLNKFNEYAVGRE
                                                                                                                                                                                                                                                            LMSKLYVNKATVDFKNKNYTDCDSDLDLATK-----
                                                                                                                                                                                                                                                                                                                                     YNSALKSSSVTEKLSYYNSALKYSKNDDLLNSIYTTLKSDSDFVDNSSILTNLNTSEKDN
                                                                                                                                                                                                                                                                                                                                                                      HQDAWKSLKADVENVYYMVKATY-KNDPVWG------NDFTCVGVMANDVNEDEKSI
                                                                                                                                                                                                                                                                                             QAEFLEMNNA-------DTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TPIGIATONLVLYSNYVNCTVLRIPFTNQGERHCDLWMANLTLSQETPDDCLNKFFEYCN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EDGQVFTD-VIAYSD-DNCDVIYVPGTDGNEEGYELWTTDY---DNIPANCLNKFNEYAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DFSGNPVQCENFRVMEKRTPTNYSFQYRYKSKNSWETIDETLILKDIGEHGFPNVMNFQR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GRETRDVFTSAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DFTCVGVMANDVNEDEKSIQAEFLFMNNADTNMQFAT-EKVTAVKMYG-YNRENAFRYET 102
                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                 PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                          9.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          169
                                                                                                                                                                                                                                                                                                                                                                                                          32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Created)
Last seq
Last ann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 91.5; DB pred. No. 2.8; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                            Score 91.5; Di Pred. No. 5.6;
                   PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sequence up
annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Clostridiales; Clostridiaceae;
                   640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             386
                   .
A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   update)
                                                                                                                                                                                                                                                                                                                                                                                                            71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             69;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hayashi
                                                                                                                                                                                                                                                            YGYNKENFSQYDDLQKKLNESK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Yamashita
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              an
                                                                                                                                                                                                                                                                                                                                                                                                                                               386;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              anaerobic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Α.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
```

δõ 밁 δÃ 뫄 Q

밁

160

.

٨

Best Local Similarity

24.18;

Pred

No.

4.6;

```
RESULT
OBMOTIS
ID WOO
OB
DT 01
                                                                                                                                                                                                                                                 Ol-OCT-2002 (TrEMBLrel. 22, Created)
DT 01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
DT 01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
DE Putative secreted histamine binding protein.
SS Ixodes scapularis (Black legged tick) (Deer tick).
CC Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida;
CC Parasitiformes; Ixodida; Ixodidae; Ixodes
( NCBI_TaxID-6945;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                   OBMVC3
OBMVC3;
O1-OCT-2002 (TrEMBLrel. 2
O1-OCT-2002 (TrEMBLrel. 2
O1-OCT-2002 (TrEMBLrel. 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-MAR-2001
01-MAR-2001
01-OCT-2002
                                          Submitted
EMBL; AF48
SEQUENCE
                                                                                                          SEQUENCE FROM N.A.
STRAIN-Rhode Island; TISSUE-Salivary
Valenzuela J.G., Francischetti I.M.,
Mather T.N., Ribeiro J.M.C.;
"Exploring the Sialome of the Tick ve
scapularis.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAD; Oxi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pfam; PF00361; oxidored_q1; 1.
Pfam; PF01010; oxidored_q1_C; 1.
Pfam; PF00662; oxidored_q1_N; 1.
PRINTS; PR01434; NADHDHGNASE5.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "Kallersjo M., Bergqvist G., Anderberg A.A.;
"Generic realignment in primuloid families of the Er
(Anglosperms): a phylogenetic analysis based on DNA
three chloroplast genes and morphology.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Chloroplast.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro; IPR003916; NADHub_oxred5.
InterPro; IPR001750; Oxidored_g1.
InterPro; IPR002128; Oxidored_g1_C.
InterPro; IPR001516; Oxidored_g1_N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Viridiplantae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Lysimachia nemorum (Yellow
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Am. J. Bot. 0:0-0(2000).
EMBL; AF213747; AAG43878.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID=110756;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Spermatophyta; Magnoliophyta; eudi
Asteridae; Ericales; Myrsinaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AR-2001 (TrEMBLrel. 16, Created)
AR-2001 (TrEMBLrel. 16, Last sequence update)
CT-2002 (TrEMBLrel. 22, Last annotation update)
dehydrogenase subunit F (Fragment).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Oxidoreductase; Plastoquinone;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    527
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                               AF483717; AAM93639.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ω
:-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -- ADTIMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCDVIYVPGTDGN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NVY - - - YMVKATY KNDPVWGNDFTCVGVMANDVNEDEKSIQAEFLFMNN - - - - - - - - -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QEGTDLDILSKWLTPSINLLHQNLKNYTDWS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EEGYEL----WTTDYDNIPANCLNKFNEYA 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         YRIDENVKQMTRPFITISFIGNKTKYSYPYESDNTMLFTLLILFLFTSC--VGFIGIPFN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NVYFKNYNGKTSTHSISLWGK------GNSKKKXQNIFLLMNNNESTSLKKKRI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  640
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                            AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ₹.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                640
72317 MW;
                                            34232 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9.8%;
21.9%;
9.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Streptophyta; Embryyta; eudicotyledons; inaceae; Lysimachia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        pimpernel).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           25;
                                                                                       EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 91.5;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120FA9D4E50E09E5 CRC64;
                                          B2DB09181CC4395D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
  91;
                                                                                                                                    Vector of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chloroplast
                                                                                                                                                                               gland;
Pham V.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  10;
  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Embryophyta; Tracheophyta; edons; core eudicots;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 557
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        58;
                                                                                                                                                                                                                                                                                                                      Arachnida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                    Lyme
                                                                                     databases
Length 306;
                                            CRC64;
                                                                                                                                                                                 Garfield
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 640;
                                                                                                                                    Disease,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ericales
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ricales s.
sequences
                                                                                                                                                                                 X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        35;
                                                                                                                                    Ixodes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 468
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           72
```

```
RESULT 14
Q813G1
ID 0813G
AC 0813G
AC 01.M2
DT 01.M2
DT 01.M3
DT 01.M3
DT 01.M3
DT 01.M3
DT 01.M3
DE Hypot
GN PFELES
OS PLASM
OC ELKAI
OX NCBL,
RN [1]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT
Q9PQ49
                                                                                                                                                                      밁
                                                                                                                                                                                      Š
                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ρy
                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q9PQ49
Q9PQ49;
01-OCT-2000
01-OCT-2000
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                           urealyticum.";
Nature 407:757-762(2000).
EMBL; AE002140; AAAF30853.1; -
InterPro; IPR000209; Peptidase_S8.
PROSITE; PS00138; SUBTILASE_SER; 1.
Hypothetical protein; Complete proteome.
Hypothetical protein; Subtraction of the proteome.
SEQUENCE 450 AA; 52947 MW; 8D0BAB5D1FBA6206 CRC64;
Plasmodium falciparum Eukaryota; Alveolata; NCBI_TaxID=36329; [1]
                                                                 01-MAR-2003 (TrEMBLrel.
01-MAR-2003 (TrEMBLrel.
01-MAR-2003 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAIN-Serovar 3;
MEDLINE-20500219; Publ
Glass J.I., Lefkowitz
                                             Hypothetical PFE1535W.
                                                                                        Q8I3G1;
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ureaplasma parvum (Ureaplasma urealyticum biotype Bacteria; Firmicutes; Mollicutes; Mycoplasmataceae
                                                                                                               08I3G1
                                                                                                                                                                                                                                                                                                                                                                                                                               "The complete
                                                                                                                                                                                                                                                                                                                                                                                                                                           Cassell G.H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID-134821;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13
                                                                                                                                                                     133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         118
                                                                                                                                                                                           102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         34
                                                                                                                                                                                                                75
                                                                                                                                                                                                                                      63
                                                                                                                                                                                                                                                           19
                                                                                                                                                                                                                                                                                                       37;
                                                                                                                                                                                                                                                                                 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      35;
                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                  NEPSLGPLQSAWKAINKSKDDPFVLMFRSRNHEP----NITCVVVTASLHNETLKIVNFT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVWANDVNEDEKSIQAE
                                                                                                                                                                                                                                                                                DEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVG----VMANDVNEDEKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SCNTSSKPLTDMLKAAKDAVGSEAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCDVIYVPGTD-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RTYYNETDGKNDTLEYQVRALNQTDYKLENVIRAGLKGTPSDKPTPLGS--NMYIEYGDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FLEMNNADTNMQFATEKVTAVKMYGYNRENAFR-----YETEDGQVFTDVTAYSDD
                                                                                                                                                                                                                FKRELKKY IDTLNKDDIVNNTINKYKFKNY IYDFISYYFDIINIFSAGNSYNDE--IRYR
                                                                                                                                                                                                                                      IQAEFL --
                                                                                                                                                                                                                                                           DETSENSHIKIWKELDWLIQNDVKIINHSYGWSP----NDFLNIGFYNFINGKEIN-DDKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (TrEMBLrel. 15, (TrEMBLrel. 15, (TrEMBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                               PRELIMINARY;
                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein
                                                      protein.
                                                                                                                                                                                                                                                                                                                                                                                                                               sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=11048724;
witz E.J., Glass
                                                                                                                                                                                                                                     ---- FMNNADTNMQFATEKVTAVKMY-----
                                                                                                                                                                                                                                                                                                                 9.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      UU441.
                       Apicomplexa;
                                  (isolate
                                                                                                                                                                                                                                                                                                                                                                                                                               of.
                                                                  23,
                                                                                                                                                                                                                                                                                                                                                                                                                               the mucosal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     21;
                                                                                                                                                                                                                                                                                                       23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Created)
Last sequence update)
Last annotation update)
                                                                 Last sequence update)
Last annotation updat
                                                                                         Created)
                                                                                                                                                                                                                                                                                                      Score 91; DB Pred. No. 7.5; Pred. No. 7.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GNEEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRT;
                                  3D7)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                     J.S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mycoplasmataceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         133
                       Haemosporida; Plasmodium
                                                                                                               1083
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            450
                                                                                                                                                                                                                                                                                                                                                                                                                               pathogen
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Heiner
                                                                                                              ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ₹
                                                                                                                                                                                                                                                                                                                            16;
                                                                  update
                                                                                                                                                                                                                                                                                                       60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                               Ureaplasma
                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                    .
R
,
                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ureaplasma
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chen
                                                                                                                                                                                                                                                                                                                              450;
                                                                                                                                                                                                                                      -GYNRENAFRYE
                                                                                                                                                                                                                                                                                                       38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                      101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         89
                                                                                                                                                                                                                                                           74
                                                                                                                                                                                                                                                                                 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               147
```

SEQUENCE FROM N.A.

Devlin K., Baker S., Davies P., Mungal K., Berriman M., Pain A., Hall N., Bowman S., Churcher C., Quail M., Barrell B.; Submitted (SEP-2002) to the EMBL/GenBank/DDBJ databases.

```
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RA Mungall K., Bowman S., Atkin R., Baker S., Barron A., Brooks K.,

Ra Buckee C.O., Burrows C., Cherevach I., Chillingworth C.,

Ra Chillingworth T., Christodoulou Z., Clark L., Clark R., Corton C.,

RA Cronin A., Davies R., Davis P., Dear P., Dearden F., Doggett J.,

RA Cronin A., Davies R., Davis P., Dear P., Dearden F., Doggett J.,

RA Cronin A., Davies R., Davis P., Dear P., Dearden F., Doggett J.,

RA Feltwell T., Goble A., Goodhead I., Gwilliam R., Hamiln N., Hance Z.,

RA Harper D., Hauser H., Hornsby T., Holroyd S., Horrocks P.,

RA Humphray S., Jagels K., James K.D., Johnson D., Kerhornou A.,

RA Humphray S., Jagels K., James K.D., Johnson D., Kerhornou A.,

RA Knights A., Konfortov B., Kyes S., Larke N., Lawson D., Lennard N.,

RA Knights A., Konfortov B., Ryes S., Larke N., Lawson D., Lennard N.,

RA Knights A., Maddison M., Mclean J., Mooney P., Moule S., Murphy L.,

RA Oliver K., Ormond D., Price C., Quail M.A., Rabbinowitsch E.,

RA Oliver K., Ormond D., Frice C., Quail M.A., Rabbinowitsch E.,

RA Parlora K., Sharp S., Smith R., Squares R., Squares S., Stevens K.,

RA Rajandream M.A., Rutter S., Rutherford K.M., Sanders M., Stimmonds M.,

Regeer K., Sharp S., Smith R., Squares R., Squares S., Stevens K.,

RA Taylor K., Tivey A., Unwin L., Whitchead S., Woodward J.,

Ra Sulston J.E., Craig A., Newbold C., Barreli B.G.

"Sequence of plasmodium falciparum chromosomes 1, 3-9 and 13.";

RABL; Al929354; CAD51668.1; -
    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                        01-OCT-2000 (TrEMBLrel. 15, Created)
01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Protein similar to yeast gast Glycophospholipid-anchored surface
glycoprotein, putative glycosidase that regulates the crosslinkin
beta-1,6-glucans in the cell wall.
SPAC19B12.02C.
                                                        Submitted (JUL-2000) to the EMBL/GenBank/DDBJ datak EMBL; AL390814; CAC00550.1; -. GeneDB_SPombe; SPAC19812.02; -. InterPro; IPR004886; GAS1. Pfam; PF03198; GAS1; 1.
                                                                                                                                                             STRAIN=972h-; Wood V., Rajandream M.A.,
                                                                                                                                                                                                                                                                                  Schizosaccharomyces pombe (Fission yeast)
Eukaryota; Fungi; Ascomycota; Schizosaccharomycetes;
Schizosaccharomycetales; Schizosaccharomycetaceae;
                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                              Schizosaccharomyces.
NCBI_TaxID=4896;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q9P378
                                           SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Hypothetical protein. SEQUENCE 1083 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hall N., Pain A., Berriman M., Ch
Mungall K., Bowman S., Atkin R.,
Buckee C.O., Burrows C., Cherevac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    123 YVPGTDGNEEGYELWTTDYDNIPANCLNKFNEY 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              566
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   506 INNMFNEIKNIHSNDDKTKYKFSCEYIILSINILINKYIECNTTLYENYLEFLDLFIEKN 565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         25 VENVYYMVKATYKNDPVWGNDFTC-----VGVMANDVNEDEKSIQAEFL-FMN----N 72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  h 9.7%; Score 90.5; I
Similarity 23.5%; Pred. No. 25;
36; Conservative 25; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            YINGKEKNE-----GANRTNYYDKY 637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACYVSKDNTEKVKIYIEKYKKKRKNCFENSYWKDIEFYNIED-----LYINDSKDVI 617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADTNMQFATEKYTA-VKMYGYNRENAFR------YETEDGQVFTDVIAYSDDNCDVI 122
                                           542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PubMed=12368867;
                                         58115 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      128123 MW;
    9.6%;
    Score 89.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                         1D243FDA5AD2EC3A CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Churcher C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4B7F49816957C623 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB 5;
  DB 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Harris B.,
                                                                                                                                            databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 1083;
Length 542;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                               Harris D.;
                                                                                                                                                                                                                                                                                                                                                                                    crosslinking of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Harris
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  7;
```

Db	Qy .	Db	Qy	Db .	Qy .	Best Lo Matches
207 AYYFDCGDDDHYDFYGINIYEWCGDSDFVSSGYQERTEEFSNMTVPMIFSEF 259	113 AYSDDNCDVIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEY 155	157 EVIQNITNTNAAAFVKAAVRDVKSYIKSSGY-RQIPVGYSTNDEEVTRDPM 206	58 EDEKSIQAEFLFMNNADIN-MQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVI 112	102 AFQDAGIYVLSDLAQPYEAISSSDPTWTVDLFSRYTEVVDSLAPYDNMLGFIAGN 156		Best Local Similarity 25.1%; Pred. No. 13; Matches 44; Conservative 22; Mismatches 60; Indels 49; Gaps 10;

Search completed: August Job time : 51.1829 secs ۲, 2003, 12:19:59

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                      Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence:
                                                                                                                                                                                                                                                                                                                                                  Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                         Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
  Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                            936
630
331.5
105
91
89.5
84.5
  seq length: 0 seq length: 2000000000
                                                                                                                                                                                                                                                                          Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                       BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-087-195-7
936
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            August 1, 2003, 12:15:03 ; Search time 10.4229 Seconds (without alignments) 771.532 Million cell updates/sec
                         127863 seqs, 47026705 residues
                                                                                                                                                                                                                                                                                                                                                  SwissProt_41:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NQPDWADEAANGAHQDAWKS.....FNEYAVGRETRDVFTSACLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Copyright (c) 1993 - 2003 Compugen Ltd
                                                                                                                                                                                                                                                                            Length
          BB
                                                                                                                                                                                    HBP2_RHIAP
HBP1_RHIAP
HBPM_RHIAP
GTF2_STRDO
GTF1_STRDO
YLM2_SCHPO
CYAG_DICDI
AMYG_ARXAD
CT99_HUMAN
FBN2_HUMAN
XYNA_RUMFL
RPA2_DROME
CICA_PAEPP
FBN2_MOUSE
ITB4_UMAN
DHE2_PEPAS
HEX_ADE09
BGAL_STRTR
Y687_MSTDA
VG13_BPB03
VPAP_HSV6G
VPAP_HSV6G
VPAP_HSV6G
VPAP_HSVAA
APU_THESA
YRR4_MYCCA
APU_EMENII
GUNA_CLOLO
YA97_MYCPN
TBP2_HAEIN
SPOT_SPICI
DROME
DLG1_DROME
                                                                                                                                                                                                                                                                                                    SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                         127863
                                                                                                                                                                                                                                    077421 rhipicephal
077420 rhipicephal
077422 rhipicephal
077422 rhipicephal
P27470 streptococc
09nud5
029126
P29126
P29028
P520028
P520028
P520028
P520028
P52029
Q61555
Q61555
Q61555
P5399
P5399
P5399
P527417
P525514
P53514
P31007
                                                                                                                                                                                                     Q9p378
Q03101
P42042
                                                                                                                                                                                                                                                                          Description
5 homo sapien
6 homo sapien
6 ruminococcu
8 drosophila
2 paenibacili
5 mus musculu
4 homo sapien
7 peptostrept
3 human adeno
8 streptococc
6 methanococc
7 human herpe
8 human herpe
8 human herpe
1 clostridium
5 mycoplasma
1 emericella
7 halobacteri
7 clostridium
5 mycoplasma
6 myroplasma
6 myroplasma
7 roteus mir
1 haemophilus
8 spiroplasma
8 spiroplasma
7 drosophilasma
                                                                                                                                                                                                            0 streptococc
1 streptococc
8 schizosacch
1 dictyosteli
                                                                                                                                                                                                     arxula aden
```

71.5	72	72 72	72 72	72.5 72.5	72.5 72.5
7.6	7.7	7.7 7.7	7.7 7.7	7.7	7.7
506	743 1041	600 603	283 363	846 889	282 661
- -					
CYSP_PLAVN	ABRA_PLAFC UN83_CAEEL	ABRA_PLAFG BGLR_ECOLI	PHLD_BACCE OMPF_SALTI	YE61_MYCTU IRE1_RAT	POR2_XENLA PSO2_YEAST
	P22620 plasmodium Q23064 caenorhabdi		P33376 bacillus ce Q56113 salmonella		

ALIGNMENTS

		RESU HBP2 ID AC DT DT DT DT OS
		! [
EMBL; U96 PDB; 10FT PDB; 10FT PDB; 10FY InterPro; Pfam; PF0 ProDom; PS Signal; 3 SIGNAL CHAIN DISULFID TURN HELIX HELIX HELIX HELIX HELIX TURN STRAND STRAND STRAND STRAND STRAND	Parasitii [1] Taxi Taxi Taxi Taxi Taxi Taxi Taxi Taxi	LT 1 _RHIAP _RHIAP O77421; 30-MAY-200 30-MAY-200 28-FEB-200 Female-spe Rhipicepha Enkarvota;
096081 10FT; 1 10FT; 1 10FV; 1	Parasitiformes; I [1] TaxID-34631; [2] TaxID-34631; SEQUENCE FROM N. A TISSUE-Salivary 9 MEDLINE-9928454, Paesen G.C. Adam "Tick histamine-t dimensional struc MOI. Cell 3:661-6 -1- FUNCTION: BIT OUTCOMPETE HI SUPPRESS INFII -1- SUBCELLULAR I -1-	IIAP -2000 -2000 -2003 -spec1
T; 19-APR-00. T; 19-APR-00. T; 19-APR-00. T; 19-APR-00. T; 17-APR-00. T; 17-APR-00. T; 17-APR-00. T; 17-APR-00. T; 17-APR-00. T; 18-bit 18-bit 20 190 20 190 20 190 23 23 23 24 45 48 55 66 66 66 66 66 66 66 66 66 66 66 66	Parasitiformes; Ixod NCBI_TaxID=34631; [1] SEQUENCE FROM N.A., SEQUENCE FROM N.A., TISSUE-Salivary glan MEDLINE-99288454; Pu Paesen G.C., Adams P "Tick histamine-bind dimensional structur MOI. Cell 3:661-671(-1-FUNCTION: BINDS OUTCOMPETE HISTA SUPPRESS INFLAMM-1-SUBCELLULAR LOCA-1-SUBCELLULAR LOCA	ST (Rel. (Rel. (Rel. (Rel. (Rel. fic h. fic h. fic h. fic app.)
11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Parasitiformes; Ixodida; IX (1] TaxID=34631; (1] TaxID=34631; (1] Parasitiformes; Ixodida; IX SEQUENCE FROM N.A., AND X-R TISSUE-Salivary gland; MEDLINE-9928454; PubMed=10 Passen G.C., Adams p.L., Ha "Tick histamine-binding pro dimensional structure."; Mol. Cell 3:661-671(1999), -1-FUNCTION: BINDS HISTAMINE RE SUPPRESS INFLAMMATION D -1-SUBCELLULAR LOCATION: 5 This SWISS-PROT entry 1:5 This SWISS-PROT entry 1:5 This SWISS-PROT entry 1:5 The European Bioinformatics between the Swiss Institut the European Bioinformatics use by non-profit instituted modified and this statement entities requires a license or send an email to license	STANDARD; ll. 39, Cr ll. 39, La ll. 41, La hlstamir ppendicul
7.1; 7.1; 7.1; 10110119; 1011011	SITIFORMES; IXODIDA; IXODIDA _TAXID=34631; ENCE FROM N.A., AND X-RAY CR UE-Salivary gland; UNE-99288454; PubMed=1036018 en G.C., Adams P.L., Harlos k histamine-binding proteins nsional structure."; Cell 3:661-671(1999). Cell 3:661-671(1999). FUNCTION: BLNDS HISTAMINE WI OUTCOMPETE HISTAMINE RECEPTO SUPPRESS INFLAMMATION: Secret	(D; Created) Last seq Last seq inde-bind
;binding ng; 1. nding; 1 2.	Parasitiformes; Ixodida; Ixodidae; Rhipicephalus. NCBI_TaxID=34631; [1] [1] [2] [1] [2] [3] [4] [5] [5] [6] [7] [5] [7] [7] [7] [7] [7] [7	T 1 RHIAP RHIAP STANDARD; PRT; 190 AA. 071421; 30-MAY-2000 (Rel. 39, Created) 30-MAY-2000 (Rel. 39, Last sequence update) 28-FEB-2003 (Rel. 41, Last annotation update) Female-specific histamine-binding protein 2 premaile-specific histamine-binding protein 2 protein 2 protein 3 prot
ing. ; 1. FEMALE-SPECIFIC	AY CRYSTALLOGRAPHY (1.25 360182; Llos K., Nuttall P.A., Steins: isolation, clonin P.EDING: NUTTH A HIGH-AFFINITY. SEPTORS INDICATES THAT I FINITE BLOOD FEEDING. PEEDING. PEEDING. PEEDING acreted. Personal of Bioinformatics and Institute. There are not itions as long as its cations as long	r; 1 nce up ation g prot
PECIFI	Rhipicephalus. Rhipicephalus. ItalLOGRAPHY (1.2 , Nuttall P.A., isolation, cloni	190 AA. update) on update) rotein 2 pr rotein 2 pr car tick)
ı	cephalus. RAPHY (1. all P.A., ion, clon H-AFFINIT ATES THAT EEDING. Sproduce matics a produce matics a produce matics a sproduce matics a sproduce matics a sproduce matics a sproduce matics a	Ce) Ce) Ck)
STAMI	(1.25 A) (1.	precursor ().
HISTAMINE-BINDING	(1.25 ANGSTROMS) A., Stuart D.I.; cloning, and thre cloning and thre HAT ITS FUNCTION 3. 3. 4. 4. 4. 4. 4. 5. 4. 5. 6. 6. 6. 6. 6. 7. 7. 8. 8. 8. 8. 8. 8. 8. 8	r (FS:
ND I NG	Stuart D.I.; ng, and three- ng, and three- ITS FUNCTION IS ITS FUNCTION IS ITS FUNCTION IS I through a colla through a colla the EMBL outs no restrictions content is in by and for co	(FS-HBP2)
PROT	e- IS TO IS TO Outsta	·
E Z	or tract-	
•	Z HK 6 15 1	

```
RESULT HEPLOLIS AC ON CONTROL OF THE PROCESS REPORT OF THE PROCESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VΩ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          망. 양
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            _RHIAP
                                                         EMBL; U96080; AAC63106.1;
HSSP; 077421; 10FT.
                                                                                                                                                         use by non-profit institutions as long modified and this statement is not removed
                                                                                                                                                                                                                                               This
                                                                                                                                                                                                                                                                                                    Paesen G.C., Adams P.L., Harlos K., Nuttail P.A., St
"Tick histamine-binding proteins: isolation, cioning
dimensional structure.";
Mol. Cell 3:661-671(1999)
Mol. Cell 3:661-671(1999)
I- FUNCTION: BINDS HISTAMINE WITH A HIGH-AFFINITY.
OUTCOMPETE HISTAMINE RECEPFORS INDICATES THAT IT
SUPPRESS INFLAMMATION DURING BLOOD FEEDING.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
16-OCT-2001 (Rel. 40, Last annotation update)
Femmale-specific histamine-binding protein 1 precursor (Rhipicephalus appendiculatus (Brown ear tick).
Eukaryota, Metazoa, Arthropoda, Chelicerata, Arachnida,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TURN
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TURN
STRAND
STRAND
                                                                                                                                             entities
                                                                                                                                                                                                         the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TURN
HELIX
TURN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRAND
TURN
                                                                                                                                                                                                                                                                                                                                                                                                                                                    TISSUE-Salivary gland;
MEDLINE-99288454; PubMed=10360182;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                077420;
30-MAY-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TURN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TURN
STRAND
TURN
                   InterPro; IPR002970; His_binding.
Pfam; PF02098; His_binding; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=34631;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Parasitiformes; Ixodida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HBP1_RHIAP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAND
                                                                                                                     send an email to license@isb-sib.ch).
                                                                                                                                                                             s SWISS-PROT entry is copyright. It is produced through a collaboration ween the Swiss Institute of Bioinformatics and the EMBL outstation - European Bioinformatics Institute. There are no restrictions on its by non-profit institutions as long as its content is in no way
                                                                                                                                                                                                                                                                                          SUBCELLULAR LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ш
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE 171
                                                                                                                                             requires a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   186
190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 77
91
109
1126
1136
1138
1138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 80
89
92
106
110
121
123
135
137
143
157
161
                                                                                                                                             license agreement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       21464 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    100.0%; Score 936; DB 1; 100.0%; Pred. No. 2.8e-74; tive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ixodidae; Rhipicephalus.
                                                                                                                                                                                                                                                                                        Secreted.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6923A3E902552B6F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         190
                                                                                                                                      (See http://www.isb-sib
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  precursor (FS-HBP1).
                                                                                                                                                                                                                                                                                                                                                                                                             cloning,
                                                                                                                                                         Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 190
                                                                                                                                                                                                                                                                                                                              ITS
                                                                                                                                                                                                                                                                                                                                                                                                                              Stuart
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                              bу
                                                                                                                                                                                                                                                                                                                            THE ABILITY IS FUNCTION
                                                                                                                                                                                                                                                                                                                                                                                                             and
                                                                                                                                                                and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Acari;
                                                                                                                                                                                                                                                                                                                                                                                                                                D.I.;
                                                                                                                                                                                                                                                                                                                                                                                                             three-
                                                                                                                                                              for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
                                                                                                                                                                                                                                                                                                                      Z TO
                                                                                                                                        ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFTTTW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HBPM_RHIAP
ID HBPM_RHIAP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local S
Matches 113
Query Match
Best Local
                                   DISULFID
DISULFID
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                     07742;
30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
30-MAY-2000 (Rel. 39, Last sequence update)
30-MAY-2000 (Rel. 39, Last annotation update)
Male-specific histamine-binding salivary protein precursor (MS-HBP).
Rhipicephalus appendiculatus (Brown ear tick).
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari;
Eukaryota; Metazoa; Ixodida; Ixodidae; Rhipicephalus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DISULFID
DISULFID
SEQUENCE
                                                                                                Signal.
SIGNAL
                                                                                                                                                                                                        use by non-profit institumodified and this statement entities requires a license
                                                                                                                                                                                                                                                                                             dimensional structure.";

MOI. Cell 3:661-671(1999).

-I- FUNCTION: BINDS HISTAMINE WITH A HIGH-AFFINITY. THE ABILITY TO OUTCOMEDETE HISTAMINE RECEPTORS INDICATES THAT ITS FUNCTION IS SUPPRESS INFLAMMATION DURING BLOOD FEEDING.
-I- SUBCELLULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Signal.
SIGNAL
CHAIN
                                                                                    CHAIN
                                                                                                                                                                                               entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                            This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the ENTRY the European Bioinformatics Institute. There are no restr
                                                                                                                                                                                                                                                                                                                                                                                          TISSUE=Salivary gland;
MEDLINE=99288454; PubMed=10360182;
                                                                                                                                                                      EMBL; U96082; AAC63108.1;
                                                                                                                                                                                                                                     use
                                                                                                                                                                                                                                                                                                                                                               Paesen G.C., Adams P.L., Harlos K.
"Tick histamine-binding proteins:
dimensional structure ".
                                                                                                                        ProDom;
                                                                                                                                     Piam;
                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                    InterPro; IPR002970; His_binding
Pfam; PF02098; His_binding; 1.
                                                                                                                                                              issp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local Similarity hes 113; Conserv
                                                                                                                                                            077421;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           \vdash
                                                                                                                          PD152455;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KSIQAEFLEMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NOPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE
                                     200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                66
137
190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                    1
19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19
                                                                                                                                                              lOFT
                                     AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ΑA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STANDARD;
                                                                                                                       His_binding; 1.
                                   193
169
22851
                                                                                  18
200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   187
166
21370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 190
190
                                                                                                                                                                                                                      institutions as long as its content atement is not removed. Usage by a
35.4%;
42.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              67.3%;
                                      WW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MW.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20;
                                               BY SIMILARITY
BY SIMILARITY
                                                                                  POTENTIAL.
MALE-SPECIFIC HISTAMINE-BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 630; DB 1; 1 pred. No. 8.7e-48; 0; Mismatches 37;
                                                                         PROTEIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BY
BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  POTENTIAL.
FEMALE-SPECIFIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                   C46A1C8C6BCAA008
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    855BE151A90053B1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIMILARITY
SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                     ., Nuttall P.A., Stu-
isolation, cloning,
 331.5; DB 1;
No. 6.4e-22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          200
                                                                                                                                                                                                          (See http://www.
                                                                                                                                                                                                                                            There are no restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HISTAMINE-BINDING
                                     CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CRC64;
           Length
                                                                                                                                                                                                                                                                                                                                                                                Stuart
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
            200;
                                                                                                                                                                                                                                                                                                                                                                                   o
                                                                                                                                                                                                                                                                                                                                                                       three-
                                                                                                                                                                                                                                                                      a collaboration
                                                                                                                                                                                                                       for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                          outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PROTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                on
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0,
```

Similarity

Score Pred.

밁 Ş 밁 Ş 밁 ő

```
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P27470;
01-AUG-1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ol-AUG-1992 (Rel. 23, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Glucosyltransferase-I precursor (EC 2.4.1.5)
    NIWWOO
                                                                                    InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 13.
Pfam; PF02324; Glyco_hydro_70; 1.
                                                                                                                                                                                                                                                               This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-AUG-1992 (Rel. 23,
01-AUG-1992 (Rel. 23,
15-SEP-2003 (Rel. 42,
                                                             SIGNAL
                                                                      Pfam; PF02324; Glyco_hydro_70; 1.
Transferase; Glycosyltransferase; Signal; Repeat;
                                                                                                                                                                          modified and this statement is not removed. entities requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                         <del>:</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Streptococcus sobrinus synthetase).";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Abo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN-6715 / Serotype MEDLINE-91123227; PubM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (Sucrose 6-glucosyltransferase).
Streptococcus downei (Streptococcus sobrinus).
Bacteria; Firmicutes; Lactobacillales; Strepto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Streptococcus downei
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRDO
                                                                                                                                               EMBL; D90213; BAA14241.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Peptide sequences for sucrose splitting and glucan binding 
Streptococcus sobrinus glucosyltransferase (water-insoluble
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=1317;
                                                                                                                                                                                                                                                                                                                                                                                         Bacteriol, 173:989-996(1991).

Bacteriol, 173:989-996(1991).

FUNCTION: PRODUCTION OF EXTRACELLULAR GLUCANS, THAT ARE THOUGHT TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BECAU OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

CATALYTIC ACTIVITY: Sucrose + {(1,6)-alpha-D-glucosyl}(N) = D-fructose + {(1,6)-alpha-D-glucosyl}(N) = D-SUBCELLULAR LOCATION: Secreted.

DISEASE: DENTAL CARLES.
                                                                                                                                                                                                                                  European Bloinformatics Institute.
                                                                                                                                                                                                                                                                                  FORMS OF GLUCANS.

SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES AND SOME BINDING PROTEIN FROM S.MUTANS.

SIMILARITY: Contains 16 cell wall binding repeats.
                                                                                                                                                                                                                                                                                                                                              MISCELLANEOUS: GTF-I SYNTHESIZES WATER-INSOLUBLE GLUCANS (ALPHA 1,3-LINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES B
                                                                                                                                                                                                                                            SWISS-PROT entry is copyright. It is produced through sen the Swiss Institute of Bioinformatics and the Ex
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRDO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matsumura
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETED--GQVFTDVIAYSD-DNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGYWGEEFTCVSYTAEKIG--KKK 77
                                                                                                                                                                                                                      non-profit institutions as long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDETCVGVMANDVNEDEKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7; PubMed=1704006;
a T., Kodama "
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STANDARD
      38
1592
1044
1592
1592
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       29;
 POTENTIAL.
GLUCOSYLTRANSFERASE-I.
CATALYTIC (APPROXIMATE),
GLUCAN-BINDING (APPROXIMATE).
6.5 X TANDEM REPEATS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ohta H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1592
                                                                                                                                                                                                                                There
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Streptococcaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Fukui K.,
                                                                                                                                                                                                                   as its content is in
                                                                                                                                                                                        http://www.isb-sib.ch/announce/
                                                                                                                                                                                                    Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (GTF-I) (Dextransucrase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62;
                                                                         Dental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                     ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Kato
                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                     and
                                                                                                                                                                                                                                                 EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  <u>ج</u>
                                                                                                                                                                                              is is
                                                                                                                                                                                                                                                                                                                     A GLUCAN-
                                                                                                                                                                                                                                                 a collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       within
glucan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BECAUSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                     commercia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         169
                                                                                                                                                                                                                      5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOSFIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local S
Matches 51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REPEAT
REPEAT
REPEAT
REPEAT
REPEAT
REPEAT
REPEAT
REPEAT
                                                                                                                                         J. Bacteriol. 169:4271-4278(1987).

J. Bacteriol. 169:4271-4278(1987).

II PUNCTION: PRODUCTION OF EXTRACELULAR GLUCANS, THAT ARE THOUGH TO PUNCTION: PRODUCTION OF EXTRACED THE DENTAL PLAQUE BE TO PLAY A KEY ROLE IN THE DEVELOPMENT OF THE DENTAL PLAQUE BE OF THEIR ABILITY TO ADHERE TO SMOOTH SURFACES AND MEDIATE THE AGGREGATION OF BACTERIAL CELLS AND FOOD DEBRIS.

I- CATALYTIC ACTIVITY: Sucrose + ((1,6)-alpha-D-glucosyl)(N) = DETUCTOSE + ((1,6)-alpha-D-glucosyl)(N) = DETUCTOSE + ((1,6)-alpha-D-glucosyl)(N+1).

I- SUBCELLULAR LOCATION: Secreted.

I- SUBCELLULAR LOCATION: Secreted.

I- SUBCELLULAR LOCATION: Secreted.

J. SLINKED GLUCOSE AND SOME 1,6 LINKAGES), GTF-S SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE). GTF-SI SYNTHESIZES WATER-SOLUBLE GLUCANS (ALPHA 1,6-GLUCOSE).
                                                                                                                                                                                                                                                                                                                   Ferretti J.J., Gilpin M.L., Russell R.R.B.; "Nucleotide sequence of a glucosyltransferase sobrinus MFe28.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Streptococcus downei (Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Glucosyltransferase-I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-JUL-1989 (Rel. 11, 01-JUL-1989 (Rel. 11, 15-SEP-2003 (Rel. 42,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GTF1_STRDO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRDO
                           This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                STRAIN-MFE28
                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                        Streptococcus
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GTFI.
                                                                                                                                                                                                                                                                                                                                                               MEDLINE-87308014;
                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=1317;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P11001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sucrose
                                                                                      BINDING PROTEIN FROM S.MUTANS.
SIMILARITY: Contains 19 cell wall binding
                                                                                                                  FORMS OF GLUCANS.
SIMILARITY: TO OTHER GLUCOSYLTRANSFERASES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            395
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    335 QPQWNGESEKPYDDHLQNGALLFDNQTDLTPDTQSNYRLLNRTPTNQTGSLDSRFTYNPN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6-glucosyltransferase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DPLGGYDF----LLANDVDNSNPVVQAEQLNWLHYLLNFGSIYANDADANF-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DPVWGNDFTCVGVMANDVNEDEKSIQAEFL----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QPDW-----ADEAANGAHQ-DAWKSLKADVENVYYMV------KATYK-N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NDTPYLHDDGDNL-MNMDNKF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCDVIYVPGTDGNEEG-----YELWT-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -----TDYDNIPANCLNKF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1093
1158
1222
1227
1287
1402
1514
1577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Α
Α.,
                                                                                                                                                                                                                                                                                                                                                            PubMed=3040686;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -DSIRVDAED-NVDADQLQISSDYLKAAY--GIDKNNKNANNHVSIVEAWSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1142
1207
1272
1272
1337
1451
1563
1592
                institutions as long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   176167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Last annotation precursor (EC 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Lactobacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ₹
::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 105; I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No. 0.3
); Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (INCOMPLETE).
BCOA66D079351ECF CRC64;
    removed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           on update)
2.4.1.5) (GTF-I) (Dextransucrase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1597
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sobrinus).
               There are no restrictions on ong as its content is in no
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Streptococcaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            55;
                                                                                                                  AND
                                                                                      repeats.
                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 1592;
                                                                                                                  SOME TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                    from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       - FMNNADTNMQFATEKVTA
                                                                                                                                               SYNTHESIZES
                                                                                                                                                                                                                                                               MEDIATE THE
                                                                                                                                                                                                                                                                                                                                  Streptococcus
                                                                                                                  A GLUCAN-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          76;
                                                                                                                                                                                                                                                                                          THOUGHT
                                                                                                                                                                            (ALPHA
                                                                                                                                                                                                                                                                            BECAUSE
                                                                                                                                                                                                                                  Ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
```

138 489

```
RESULT 6
YLM2_SCHPO
              γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ν
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SO STATES TO SECOND SEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
Wood V., Gwilliam R., Rajandream M.A., Lyne M., Lyne R., Stewart A., Sgouros J., Peat N., Hayles J., Baker S., Basham D., Bowman S., Brooks K., Brown D., Brown S., Chillingworth T., Churcher C.M., Collins M., Connor R., Cronin A., Davis P., Feltwell T., Fraser A., Gentles S., Goble A., Hamlin N., Harris D., Hidalgo J., Hodgson G., Holroyd S., Hornsby T., Howarth S., Huckle E.J., Hunt S., Jagels K., James K., Jones M., Leather S., McDonald S., McLean J., Mooney P., Moule S., Mungall K., Murphy L., Niblett D., Odell C., Oliver K., O'Neil S., Pearson D., Quail M.A., Rabbinowitsch E.,
                                                                                                                                                                                                                                                                                                                                  Eukaryota; Fungi; Ascomy Schizosaccharomycetales; Schizosaccharomyces.
                                                                                                                                                                                                                                                                                                                                                                                                                           YLM2_SCHPO STANDARD; PRT; 542 AA. 099378; P78853;
15-SEP-2003 (Rel. 42, Created)
15-SEP-2003 (Rel. 42, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Hypothetical protein C19B12.02c in chromosome SPAC19B12.02c.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  entities
or send a
                                                                                                                                                                                                                    MEDLINE=21848401; PubMed=11859360;
                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REPEAT
REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REPEAT
REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REPEAT
REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro; IPR002479; CW_binding.
InterPro; IPR003318; Glyco_hydro_70.
Pfam; PF01473; CW_binding_1; 16.
Pfam; PF02324; Glyco_hydro_70; 1.
                                                                                                                                                                                                                                                                                                                                                                                                     Schizosaccharomyces pombe (Fission yeast).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Transferase; Glycosyltransferase; Signal;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; M17391; AAC63063.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  s requires a license agreement (See http://www.isb-sib.ch/announce/
an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NDTPYLHDDGDNL-MNMDNKF 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCDVIYVPGTDGNEEG-----YELWT- 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DPLGGYEL - - -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QPQWNGESEKPYDDHLQNGALKFDNQSDLTPDTQSNYRLLNRTPTNQTGSLDSRFTYNAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QPDW-----ADEAANGAHQ-DAWKSLKADVENVYYMV------KATYK-N 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DPVWGNDFTCVGVMANDVNEDEKSIQAEFL-----FMNNADTNMQFATEKVTA 86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1099
1099
1099
1163
1163
1227
1227
1292
1406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TDYDNIPANCLNKF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1050
1597
1597
1132
1213
1277
1342
1399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1597
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -LLANDVDNSNPIVQAEQLNWLHYLLNFGTIYAKDADAN--FDSIRVDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           177080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -----DNVDADLLQISSDYLKAAY--GIDKNNKNANNHVSIVEAWSD
                                                                                                                                                                                                                                                                                                                                                          Schizosaccharomycetaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AC REPEAT.
AC REPEAT.
AC REPEAT.
B REPEAT.
B REPEAT.
B REPEAT.
B REPEAT.
AC REPEAT.
AR REPEAT.
AR REPEAT.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.25 A,
A REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 91; I
Pred. No. 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CATALYTIC (APPROXIMATE).
GLUCAN-BINDING (APPROXIMATE).
1.25 A, 2 B, AND 5 AC REPEATS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GLUCOSYLTRANSFERASE-I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         POTENTIAL
                                                                                                                                                                                                                                                                                                                                                                             Schizosaccharomycetes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REPEAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RPEAT (INCOMPLETE).
B9E86A200868798E CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB
1.9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  55;
                                                                                                                                                                                                                                                                                                                                                                                                                                              I precursor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 1597;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Dental caries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  76;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            400
                                                                       Ş
                                                                                                                                                                Š
                                                                                                                                                                                                               DЬ
                               밁
                                                                                                                       뭐
                                                                                                                                                                                                                                                             Ş
```

```
RA Rutherford K., Rutter S., Saunders D., Seeger K., Sharp S.,

RS Skelton J., Simmonds M., Squares R., Squares S., Stevens K.,

RA Taylor K., Taylor R.G., Tivey A., Walsh S.V., Warren T., Whitehead S.,

RA Woodward J., Volckaert G., Aert R., Robben J., Grymonprez B.,

RA Weltjens I., Vanstreels E., Rieger M., Schaefer M., Mueller Auer S.,

RA Gabel C., Fuchs M., Fritzc C., Holzer E., Moestl D., Hilbert H.,

RA Garzym K., Langer I., Beck A., Lehrach H., Reinhardt R., Pohl T.M.,

RA Borzym K., Langer I., Beck A., Lehrach H., Reinhardt R., Pohl T.M.,

RA Eger P., Zimmermann W., Wedler H., Wambutt R., Purnelle B.,

ROffeau A., Cadieu E., Dreano S., Gloux S., Lelaure V., Mottler S.,

RA Galibert F., Aves S.J., Xiang Z., Hunt C., Moore K., Hurst S.M.,

RA Galibert F., Rochet M., Galilardin C., Tallada V.A., Garzon A., Thode G.,

RA Lucas M., Rochet M., Galilardin C., Tallada V.A., Garzon A., Thode G.,

RA Daga R.R., Cruzado L., Jimenez J., Sanchez M., del Rey F., Benito J.,

RA Dominguez A., Revuelta J.L., Moreno S., Armstrong J., Forsburg S.L.,

RA Cerrutti L., Lowe T., McComble W.R., Paulsen I., Potashkin J.,

RA Shpakovski G.V., Ussery D., Barrell B.G., Nurse P.;

"The genome sequence of Schizosaccharomyces pombe.";

Nature 415:871-880(2002).
                                                                                                                                                                                             Query Match
Best Local
                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                           CARBOHYD
CARBOHYD
                                                                                                                                                                                                                                                        CONFLICT
                                                                                                                                                                                                                                                                                                                CARBOHYD
CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the Ew the European Bioinformatics Institute. There are no restructed by non-profit institutions as long as its content use by non-profit institutions as long as its content.
                                                                                                                                                                                                                                                                                                                                                                                                                                        CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; AL390814; CAC00550.1; -
EMBL; D89203; BAA13864.1; -.
GeneDB_SPombe; SPAC19B12.02c;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNA Res. 4:363-369(1997).
                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                    CARBOHYD
                                                                                                                                                                                                                                                                                                    CARBOHYD
                                                                                                                                                                                                                                                                                                                                               CARBOHYD
                                                                                                                                                                                                                                                                                                                                                               CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                          CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                        DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                      SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro; IPR004886; Pfam; PF03198; GAS1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cDNAs.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Yoshioka S., Kato K., Nakai K., Okayama H., Nojima H.;
Tidentification of open reading frames in Schizosaccharomyces pombe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=98162722; PubMed=9501991;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN=PR745
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE OF 268-542 FROM N.A.
207
                                                         157
                                                                                                                    102
                                                                                       58
                                                                                                                                                  13
                                                                                                                                                                               44;
                                                                                                                                                                                             Similarity
                                                                            EDEKSIQAEFLFMNNADTN-MQFATEKVTAVKMY----GYNRENAFRYETEDGQVFTDVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4:363-369(1997)
AYYFDCGDDDDHVDFYGINIYEWCGDSDFVSSGYQERTEEFSNMTVPMI--FSEF
                                                            E--
                                                                                                                                                AHQDAWKSLKADVENVYYMVKATYKNDPVWGNDF------TCVGVMANDVN
                           AY-----SDDNCDVI-----YVPGTDGNEEGYELWTTDYDNIPANCLNKFNEY
                                                                                                                    AFQDAGIYVLSDLAQPY---
                                                                                                                                                                                                                                       285
542
                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                    35
91
161
161
249
279
279
406
484
484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein;
                                                                                                                                                                                                                                         Ž
                                                         -VIQNNTNTNAAAFVKAAVRDVKSYIKSSGY-RQIPVGYSTNDEEVTRDPM
                                                                                                                                                                                                                                                     542
542
520
520
161
161
279
278
278
                                                                                                                                                                                                                                          58115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GAS1.
                                                                                                                                                                                             9.6%;
25.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Glycoprotein;
                                                                                                                                                                                                                                         MW;
                                                                                                                                                                              22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .'
                                                                                                                                                                                          Score 89.5;
Pred. No. 1.
                                                                                                                                                                                                                                                                                   N-LINKED
                                                                                                                                                                                                                                                                                                              N-LINKED
N-LINKED
N-LINKED
N-LINKED
N-LINKED
                                                                                                                    -EAISSSDPTWTVDLFSRYTEVVDSLAPYDNMLGFIAG--N
                                                                                                                                                                                                                                                     TFSEIVALFSD -> SGGIAYQYF -> VV
                                                                                                                                                                                                                                                                                                                                                                                                          N-LINKED
                                                                                                                                                                                                                                                                                                                                                                                                                        SER-RICH
                                                                                                                                                                                                                                                                                                                                                                                                                                     HYPOTHETICAL PROTEIN C19B12.02C
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Otein; Signal.
POTENTIAL.
                                                                                                                                                                                                                                         1D243FDA5AD2EC3A
                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                             (GLCNAC...)
(GLCNAC...)
(GLCNAC...)
                                                                                                                                                                                                                                                                                                                                                                           (GLCNAC. .
                                                                                                                                                                                                                                                                                               (GLCNAC. .
                                                                                                                                                                                                                                                                                    (GLCNAC
                                                                                                                                                                                                                                                                                                                                                                                                       (GLCNAC. .
                                                                                                                                                                                        .8;
                                                                                                                                                                                                           DВ
                                                                                                                                                                                                                                                          VWWHCLPIW
                                                                                                                                                                                                                                                                      HSLSLLPRSET
                                                                                                                                                                                                         1;
                                                                                                                                                                               60;
                                                                                                                                                                                                                                         CRC64;
                                                                                                                                                                                                        Length
                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                       (IN
                                                                                                                                                                                                                                                                                                                (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                            (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                           (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                         (POTENTIAL)
                                                                                                                                                                                                                                                                                    (POTENTIAL)
                                                                                                                                                                                                                                                                                                    (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             restrictions
                                                                                                                                                                                                             542;
                                                                                                                                                                                                                                                        REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL
                                                                                                                                                                               49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Benito J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Thode G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               outstation
                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                     2)
                                                                                                                    156
                                                                                                                                                  57
                                                                                                                                                                              10;
```

```
CYAG_DICDI
Q03101;
01-JUL-1993
DOMAIN
DOMAIN
DOMAIN
DOMAIN
DOMAIN
STRAND
HELIX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-JUL-1993 (Rel. 26, Created)
01-JUL-1993 (Rel. 26, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Adenylate cyclase, germination specific (EC 4
pyrophosphate-lyase) (Adenylyl cyclase).
                                                                                                                    PROSITE; PS50839; CHASE; 1.

PROSITE; PS00452; GUANYLATE_CYCLASES_1; 1.

PROSITE; PS50125; GUANYLATE_CYCLASES_2; 1.

PROSITE; PS50125; GUANYLATE.CYCLASES_2; 1.
                                                                                                                                                                        InterPro; IPR006189; CHASE.
InterPro; IPR001054; G_cyclase.
Pfam; PF03924; CHASE; 1.
Pfam; PF003211; guanylate_cyc; 1
SMART; SM00044; CYCC; 1.
                                                                                                                                                                                                                                                                                                    This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Structurally distinct and stage-specific adenylyl cyclase genes play different roles in Dictyostelium development."; Cell 69:305-315(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3D-STRUCTURE MODELING OF 387-543.
MEDLINE-98054247; PubMed-9391039;
Llu Y., Ruoho A.E., Rao V.D., Hurley J.H.;
"Catalytic mechanism of the adenylyl and guanylyl cyclases: modeling and mutational analysis.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pitt G.S., Milona Devreotes P.N.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Dictyostellum discoideum (Slime mold).
Eukaryota; Mycetozoa; Dictyostellida; Dictyostellum
                                                                                             TRANSMEM
                                                                                                                                                                                                                                   DictyDb; DD04007;
                                                                                                                                                                                                                                              EMBL; M87278; AAA33164.1; -. PDB; 1AWM; 28-JAN-98.
                                                                                                                                                                                                                                                                                              entities requires a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A. MEDLINE-92233467;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NCBI_TaxID=44689;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACGA OR ACG
                                                                                                                 D-structure.
                                                                                                                                                                                                                                                                                 tities requires a license agreement (See http://www.isb-sib.ch/announce/send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                           C. Natl. Acad. Sci. U.S.A. 94:13414-13419(1997).

FUNCTION: ACG HAS A LARGE EXTRACELLULAR DOMAIN WHICH MAY BE INVOLVED IN THE RECOGNITION OF AN EXTRACELLULAR SIGNAL PRES DRAING TORMINATION, LEADING TO ACTIVATION OR INHIBITION OF SYNTHESIS BY THE CYTOPLASMIC DOMAIN.

CATALYTIC ACTIVITY: ATP = 3',5'-CYClic AMP + diphosphate. CATALYTIC ACTION: INSENSITY TO GUANINE NUCLEOTIDES.

SUBCELLULAR LOCATION: Type II membrane protein.

DEVELOPMENTAL STAGE: AFTER FRUITING BODIES HAVE BEEN FORMED DURING CERMINATION.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mutational analysis.
                                                                                                                                                                                                                                                                                                                                                                            SIMILARITY: Contains 1 CHASE domain.
                                                                                                                                                                                                                                                                                                                                                                                                 SIMILARITY: Belongs to the adenylyl cyclase class-4/guanylyl
                                                                                                                                                                                                                                                                                                                                                                                         cyclase family.
 42
396
738
738
403
                                                                                           19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STANDARD;
                                                                                                                                                                                                                                   acgA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PubMed=1348970;
N., Borleis J.,
 317
526
848
848
398
                                                                                          18
41
                      CHASE.
GUANYLATE CYCLASE.
ASN-RICH.
POLY-ASN.
                                                                              CYTOPLASMIC (POTENTIAL) SIGNAL-ANCHOR (TYPE-II (POTENTIAL)
                                                                    EXTRACELLULAR (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Lin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     858
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  K.C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Reed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4.6.1.1)
                                                                                                                                                                                                                                                                                                                                                                                                                           HAVE BEEN FORMED AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  R.R.
                                                                                          MEMBRANE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (ATP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAMP
 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q
                                                                                                                                                                                                                                                                                                                                                                                                                                     AMYG_ARXAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 8
                                                                                                                                                  This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TURN
                                                                                                                                                                           <del>-</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HELIX
```

```
Query Match
Best Local S
Matches 39
                                                                                                                                                                                                                                                                                                                                                                                                              AWYG_ARXAD STANDARD; PRT; 624 AA. P42042; P1-NOV-1995 (Rel. 32, Created) P1-NOV-1995 (Rel. 32, Last sequence update) P1-SEP-2003 (Rel. 42, Last annotation update Glucoamylase precursor (EC 3.2.1.3) (Glucan (1,4-alpha-D-glucan glucohydrolase).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 HELIX
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRAND
STRAND
HELIX
STRAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TURN
STRAND
STRAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TURN
STRAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HELIX
TURN
STRAND
                                                                                                      use by non-profit institutions as long modified and this statement is not removed. entitles requires a license agreement (See
                                                                                                                                                                                                                                                Bul Minh D., Kunze I., Foerster S., Wartmann T., Horstmann Manteuffel R., Kunze G.;
Submitted (DEC-1994) to the EMBL/GenBank/DDBJ databases.
-I- CATALYTIC ACTIVITY: Hydrolysis of terminal 1,4-linked
InterPro; IPR005036; CBM_21.
InterPro; IPR000105; Glyco_hydro_15
Pfam; PF03370; CBM_21; 1.
Pfam; PF00723; Glyco_hydro_15; 1.
                                                    EMBL; 246901; CAA86997.1;
HSSP; P04064; 1GAI.
                                                                                              entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                              Arxula adeninivorans (Yeast).
Eukaryota; Fungi; Ascomycota; Sac
Saccharomycetales; Dipodascaceae;
                                                                                                                                                  between the Swiss Institute of Bioinf
the European Bioinformatics Institute
                                                                                                                                                                                                                                                                                                          STRAIN-LS3;
                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=37620;
                                                                                                                                                                                                          with release of beta-D-glucose. SIMILARITY: BELONGS TO FAMILY 15 OF GLYCOSYL HYDROLASES
                                                                                                                                                                                                                                      glucose residues successively
                                                                                                                                                                SWISS-PROT entry is copyright. It is produced through sen the Swiss Institute of Bioinformatics and the EN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           . Similarity
39; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NDVNEDEKSIQAEFLF----MNNADTNM----QFATEKVTAVKMYGYNRE-NAFRYETEDG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WADEAANGAHQDAWKSLKADVENV----YYM-----VKATYKNDPVWG-NDFTCVGVMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SYFPILHAFPDINKDII------GLDINSTDYMNETIKKSIFNK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QVFTDVIAYSDDNCDVIYVPGTDGNEEGYELWTTDYDN--IPANCLNK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               --LNTTLKNSEFQYLFWIKKINNNDRNCFEEKFSKEIKDTFQIYSFDENTNSIHVAKNKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      YSEEENSNIQMDLERSSKQIIHNIQMNAMYLLSSIDTLKALYYVNPNFDRNDFNVF----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             492
504
511
517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                       N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 98413 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; Score 84.5; I
; Pred. No. 8.6;
31; Mismatches
                                                                                                                                                                                                                                                                                                                                                              Saccharomycotina; Saccharomycetes; eae; mitosporic Dipodascaceae; Arxula.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 B483FB255289E65D CRC64;
                                                                                                                                                                                                                                      from
                                                                                                                                                                                                                                                                                                                                                                                                                                               update)
                                                                                                                                                                                                                                      non-reducing
                                                                                                                                                  There are no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DВ
                                                                                                                                      as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                 1; 4-alpha-glucosidase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1;
                                                                                                                        Usage
                                                                                                                                                             and the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                             Horstmann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                           ьy
                                                                                                                                                                                                                                       ends
                                                                                                                                                   restrictions
                                                                                                            isb-sib
                                                                                                                           and
                                                                                                                                                                                                                                     ed alpha-D-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     151
                                                                                                                                                                                ø
                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             37;
                                                                                                                           for
                                                                                                                                                                  collaboration .
                                                                                                            .ch/announce,
                                                                                                                         ons on its
in no way
commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                      chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
```

```
RESULT
CT99_HU

ID 29_HU

AC QC

DT 21

DT 21

DT 22

DT 22

RR RR

RR

RR RR

RR

RR RR

RR RR

RR 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              뭕
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STITITION OF STITI
RP SEQUENCE FROM N.A.

RP MEDLINE-21638749; pubMed=11780052;

RA Deloukas P., Matthews L.H., Ashurst J., Burton J., Gilbert J.G.R.,

RA Deloukas P., Matthews L.H., Ashurst J., Babbage A.K., Bagguley C.L.,

RA Deloukas P., Matthews L.H., Ashurst J.P., Babbage A.K., Bagguley C.L.,

RA Bailey J., Barlow K.F., Bates K.N., Beard L.M., Beare D.M.,

RA Beasley O.P., Bird C.P., Blakey S.E., Bridgeman A.M., Brown A.J.,

RA Beasley J.P., Burler A.P., Carder C., Carter N.P.,

RA Buck D., Burrill W.D., Butler A.P., Carder C., Carter N.P.,

RA Clagg S., Cobley V.E., Collier R.E., Connor R.E., Corby N.R.,

Coulson A., Coville G.J., Deadman R., Dhami P.D., Dunn M.,

RA Clington A.G., Frankland J.A., Fraser A., French L., Garner P.,

RA Ellington A.G., Frankland J.A., Fraser A., French L., Garner P.,

RA Ellington A.G., Frankland J.A., Fraser A., French L., Garner P.,

RA Ellington A.G., Frankland J.A., Fraser A., French L., Garner P.,

RA Hammond S., Harley J.L., Heath P.D., Ho S., Holden J.L., Howden P.J.,

RA Huckle E., Hunt A.R., Hunt S.E., Jekosch K., Johnson C.M., Johnson D.,

RA Kay M.P., Kimberley A.M., King A., Knights A., Laird G.K., Lawlor S.,

RA Lehvaeslaiho M.H., Leversha M.A., Lloyd C., Lloyd D.M., Lovell J.D.,

RA Marsh V.L., Martin S.L., McConnachie L.J., McLay K., McMurray A.A.,

RA Milne S.A., Mistry D., Moore M.J.F., Mullikin J.C., Nickerson T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query
Best I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 _HUMAN
CT99_HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           YPOURTS9.
CYDORFS9.
Homo sapiens (Human).
Homo sapiens (Human).
Homo sapiens (Human).
Horia; Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CARBOHYD
CARBOHYD
CARBOHYD
CARBOHYD
CARBOHYD
CARBOHYD
CARBOHYD
CARBOHYD
CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CHAIN
ACT_SITE
ACT_SITE
ACT_SITE
CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Signal.
SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q9NUD5;
28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRINTS; I
PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  28-FEB-2003
28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    و
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PR00736;
; PS00820;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WTTDYDNIPANCLNKFNEYAVGRETRDVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DPVWGNDFTCVGVMANDVNEDEKSIQAEFLFMNNADTNMQF---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  YSYKDISVVLGVMHGYANDNVFSY-TND-QILATAYQVSTSFLDVYKVANTTSDESGKPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ALLLGADF - - - - - - ANDMGDHELSDKLKTQASKLSDTLPEFWDSARQLILYEYGPVLRGK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ANGGSQDTVREQLYDSDKYPQVAPIKKDLQFVASNWSSPSFDLWEEEESAHFYTRLVQRK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ANGAHQDA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Glycosidase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (Rel.
(Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        340
343
344
70
98
111
168
267
333
460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GLHYDRLASE15.
; GLUCOAMYLASE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  41,
41,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   544
343
343
344
54
70
98
111
111
168
168
333
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    , Last sequence up, Last annotation C20orf99.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          08689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9.0%;
21.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Last
Last
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Polysaccharide degradation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ¥.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GLUCOANTLASE.

GLUCOANTLASE.

CATALYTIC BASE (BY SIMILARITY).

GENERAL ACID CATALYST (BY SIMILARITY).

INTERACT WITH SUBSTRATES (BY SIMILARITY).

N-LINKED (GLCNAC...) (POTENTIAL).

N-LINKED (GLCNAC...) (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -VGRYPEDVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Craniata; Vertebrata; Catarrhini; Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -----ENVYYMVKATYKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         No ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB
5.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 624;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            358
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
```

```
RESULT 10
FBN2_HUMAN
멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SO THE TEST OF THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                           01-JUN-1994
01-FEB-1996
28-FEB-2003
Fibrillin 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Hypothetical 3 ZN_FING 3 ZN_FING 3 ZN_FING 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DOMAIN
DOMAIN
DOMAIN
SEQUENCE
                SEQUENCE FROM N.A.
MEDLINE=94165150; PubMed=8120105;
Zhang H., Apfelroth S.D., Hu W., Davis
Bonadio J., Mecham R.P., Ramirez F.;
                                                                                                                                                                               Homo sapiens (Human)
Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                  FBN2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Oliver K., Parker A., Patel R., Pearce T.A.V., Peck A.I., Phillimore B.J.C.T., Prathalingam S.R., Plumb R.W., Ramsay H., Rice C.M., Ross M.T., Sott C.E., Sehra H.K., Shownkeen R., Sims Skuce C.D., Smith M.L., Soderlund C., Steward C.A., Sulston J.E., Swann R.M., Sycamore N., Taylor R., Tee L., Thomas D.W., Thorpe A Tracey A., Tromans A.C., Vaudin M., Wallis J.M., Williams L., Williams Whitehead S.L., Whittaker P., Willey D.L., Williams L., Williams Milming L., Wray P.W., Hubbard T., Durbin R.M., Bentley D.R., Becker B., Willey D.R., Bentley D.R., Becker B., Williams D.W., Bentley D.R., Becker B., Willey D.R., Bentley D.R., Becker B., Willey D.R., Becker B., Williams D.W., Bentley D.R., Bentley
                                                                                                                                                                                                                                                                                                                                                                                                     FBN2_HUMAN P35556;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; AL034548; CAB81631.1; -. Genew; HGNC:16230; C20orf99: InterPro; IPR001878; Znf_CCHC. Pfam; PF00098; zf_CCHC; 3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rogers J.;
"The DNA sequence and com Nature 414:865-871(2001).
                                                                                                                                                      NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SMART;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRINTS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SIMILARITY: Contains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                European
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SWISS-PROT entry is copyright. It is produced through een the Swiss Institute of Bioinformatics and the En European Bioinformatics Institute. There are no restrictly by non-profit institutions as long as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SM00343; ZnF_C2HC; 3
E; PS50158; ZF_CCHC;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity 37; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PR00939;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LFILFRNETVDVE---DIVTWLKRHCDVLAVPVKVTD----RFGIWTGEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EDEKSIQAEFLFMNNADTNMQF-ATEKVTA-VKMYGYNREN----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RPGEAEDAAERPLQDEPAAAAAGPGKGRFLVRICFQGDEGACPT--RDFVVGALILRSIG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKND----PVWGNDFTCVGVMANDVN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              --- AFRYETEDGQVFTDVIAYSDDNCDVIYVP--GTDGNEEGYELWTTDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MDPSDIYAVIQIPGSREFDVSFRSAEKLALFLRVYEEKREQEDCWENFVVLGRSKSSLKT
                                                                                                                                                                                                                                                                                         4 (Rel. 29, Created)
5 (Rel. 33, Last sequ
3 (Rel. 41, Last anno
2 precursor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 protein;
334 351
352 369
371 388
67 71
126 134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AA;
expression
                                                                                                                                                                                                                                                                                                                                                                                                                           STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; C2HCZNFINGER.
ZnF_C2HC; 3.
8; ZF_CCHC; 2.
                                                                                                                                                                               Chordata;
Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   134
159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           351
369
388
71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  n; Zinc-finger; Repeat.
351 CCHC-TYPE 1.
369 CCHC-TYPE 2.
388 CCHC-TYPE 3.
71 POLY-GLY.
134 POLY-ALA.
159 POLY-ALA.
43618 MW; C3B728090D2D7A4B CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             43618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      comparative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3 CCHC-type zinc fingers.
of.
                                                                                                                                                                                                                                                                                                                  sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   30;
fibrillin-2,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score
Pred.
                                                                                                                                                                                    Craniata; V
Catarrhini;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         83.5; DI
No. 4.3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         analysis
                                                                                                                                                                                                                                                                                                                  on update)
                                                                                                                                                                                                                                                                                                                                                                                                                           2911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (See
                                               Ħ
                                                                                                                                                                                                             Vertebrata;
                                               .c.,
                                                                                                                                                                                                                                                                                                                                                                                                                           ₽
þ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DB
                                                                                                                                                                                       Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  http://www.isb-sib.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         of human
novel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Usage
                                               Sanguineti
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ۲,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
microfibrillar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                             Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              bу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            chromosome
                                                                                                                                                                                       Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   restrictions
                                                    റ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        404;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ۵
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 tor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Beck
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Α:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 s,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              s.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         195
```

```
EMBL; U03272; AAA18950.1; -.

DR EMBL; X62009; -; NOT_ANNOTATED_CDS.

PIR; A54105; A54105.

PR HSSP; P35555; 1EMN.

R Genew; HGNC:3604; FBN2.

R MIM; 121050; -.

R MIM; 121050; -.

R GO; GO:0005578; C:extracellular matrix; TAS.

RGO; GO:0005201; F:extracellular matrix structural constituent; TAS.

RGO; GO:0007345; P:embryogenesis and morphogenesis; TAS.

RGO; GO:0007397; P:histogenesis and organogenesis; TAS.

RINTERPO; IPRO0152; ASX_hydroxyl.

RINTERPO; IPRO01438; EGF_II.

RINTERPO; IPRO02211; Fibril-assoc.

Pfam; PF00683; TR; 9.

Pfam; PF00683; TG; 45.

R PAINTS; PR00010; EGFELODD.

R PAINTS; PR00010; EGFECA; 43.

R PROSITE; PS00010; ASX_HYDROXYL; 43.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WARIANTS CCA TYR-1252 AND SER-1433, AND VARIANT ILE-964.

WARIANT SCA TYR-1252 AND SER-143032;

WARIANT SCA TYR-1259; PubMed-7493032;

Putnam E.A., Zhang H., Ramirez F., Milewicz D.M.;

"Fibrillin-2 (FBN2) mutations result in the Marfan-like disorder,

"congenital contractural arachnodactyly.";

Ru Nat. Genet. 11:456-458(1995).

Ru (4)

PVARIANTS CCA HIS-1114.

WAEDLINE-98407789; PubMed-9737771;

Rabcock D., Gasner C., Francke U., Maslen C.;

"A single mutation that results in an asp-to-his substitution and

"Tarchnodactyly.";

Ru Hum. Genet. 103:22-28(1998).

RU (5)

VARIANTS CCA PHE-1141 AND TRP-1252.

WAEDLINE-20259236; PubMed-10797416;

Relleh S., Zhou G., Wang M., Der Kaloustian V.M., Pagon R.A.,

Godfrey M.;

"Two novel fibrillin-2 mutations in congenital contractural

"Two novel fibrillin-2 mutations in congenital contractural
                                                                                                                                                                                                                                                                                                                            This SWISS-PROT entry is copyright. It is produced through a between the Swiss Institute of Bioinformatics and the EMBI the European Bioinformatics Institute. There are no restrict use by non-profit institutions as long as its content is modified and this statement is not removed. Usage by and sentitles requires a license agreement (See http://www.isb-sitor send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   two dii
Nature
(3)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE O
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Am. J. Med. Genet. 92:7-12(2000).

- FUNCTION: STRUCTURAL COMPONENT OF CONNECTIVE TISSUE MICROFI FUNCTION: STRUCTURAL COMPONENT OF CONTAINING MICROFIBRILS REGINAL PROPERTY. FIBRILLIN-2-CONTAINING MICROFIBRILS REGINE THE BARLY PROCESS OF ELASTIC FIBER ASSEMBLY.

- ID SEASE: DEFECTS IN FBN2 ARE THE CAUSE OF CONCENTAL CONTRA ARACHNODACTYLY (CCA) (ALSO KNOWN AS BEALS SYNDROME). CCA IS PHENOTYPICALLY SIMILAR TO MARRAN SYNDROME, BUT DOES NOT EFF AORTA AND THE EYES.

- I- SIMILARITY: Contains 47 EGF-like domains.

- I- SIMILARITY: Contains 47 TGF-beta binding protein (TGFBP) dom THE BARLY SYNDROME TO THE EYES.

- I- SIMILARITY: Contains 47 TGF-beta binding protein (TGFBP) dom THE BARLY SYNDROME TO THE EYES.

- I- SIMILARITY: Contains 47 TGF-beta binding protein (TGFBP) dom THE BARLY SYNDROME TO THE EYES.

- I- SIMILARITY: Contains 47 TGF-beta binding protein (TGFBP) dom THE BARLY SYNDROME TO THE EYES.

- I- SIMILARITY: CONTAINS 47 TGF-beta binding protein (TGFBP) dom THE BARLY SYNDROME TO THE EYES.

- I- SIMILARITY: CONTAINS 47 TGF-beta binding protein (TGFBP) dom THE BARLY SYNDROME TO THE EYES.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Tsipouras P., Ramirez F., Ho "Linkage of Marfan syndrome two different fibrillin gene Nature 352:330-334(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             component preferentially located J. Cell Biol. 124:855-863(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       <del>+++</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  arachnodactyly.";
Am. J. Med. Genet
-1- FUNCTION: STF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Lee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Β.
                                                                                                                                                                                                                                                                                                                                                                                  SWISS-PROT entry is copyright. It is produced through a collab-
en the Swiss Institute of Bioinformatics and the EMBL outst
Buropean Bioinformatics Institute. There are no restrictions
by non-profit institutions as long as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              E OF 752-1505 FROM N.A.

=91304567; PubMed=1852206;

Godfrey M., Vitale E., Hori

as P., Ramirez F., Hollister
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRUCTURAL COMPONENT OF CONNECTIVE TISSUE MICROFIBRILS CALCIUM. FIBRILLIN-2-CONTAINING MICROFIBRILS REGULATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             frome and genes.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 phenotypically
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            elastic matrices
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mattei
                                                                                                                                                                                                                                                                                                                                                        . Usage by and for http://www.isb-sib.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               . -G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 related disorder to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sarfarazi M.,
                                                                                                                                                                                                                                                                                                                             is in and for commerciand for commerciant ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CONTRACTURAL CCA IS
                                                                                                                                                                                                                                                                                                                                                                                                    n a collaboration -
EMBL outstation -
trictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    domains.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EFFECT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    THE
      PROSITE; PS00022;
PROSITE; PS01186;
PROSITE; PS01187;
Extracellular matr
   RREPEAT; $2
CHAIN
DOMAIN
DOMAI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Signal
                                                                                                                                                                                              022; EGF_1; 2.
186; EGF_2; 37.
187; EGF_CA; 42.
matrix; Calcium-binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Multigene
    family; Disease mutation;
POTENTIAL.
FIBRILLIN 2.
   EGF-LIKE 1.
EGF-LIKE 2.
EGF-LIKE 3.
EGF-LIKE 4. CAL
EGF-LIKE 5. CAL
IGFBP 1. CAL
EGF-LIKE 7. CAL
EGF-LIKE 10. CAL
EGF-LIKE 11. CAL
EGF-LIKE 12. CAL
EGF-LIKE 12. CAL
EGF-LIKE 13. CAL
EGF-LIKE 20. CAL
EGF-LIKE 21. CAL
EGF-LIKE 22. CAL
EGF-LIKE 23. CAL
EGF-LIKE 23. CAL
EGF-LIKE 31. CAL
EGF-LIKE 32. CAL
EGF-LIKE 33. CAL
EGF-LIKE 34. CAL
EGF-LIKE 34. CAL
EGF-LIKE 35. CAL
EGF-LIKE 36. CAL
EGF-LIKE 37. CAL
EGF-LIKE 38. CAL
EGF-LIKE 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  , CALCIUM-BINDING.
, CALCIUM-BINDING.
, CALCIUM-BINDING.
0, CALCIUM-BINDING.
                                                                                                                                                                                         CALCIUM-BINDIN
CALCIUM-BINDIN
CALCIUM-BINDIN
CALCIUM-BINDIN
CALCIUM-BINDIN
CALCIUM-BINDIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CALCIUM-BINDING.
                                                                                                                                                                                                                                                                                                                       , CALCIUM-BINDING.
, CALCIUM-BINDING.
, CALCIUM-BINDING.
, CALCIUM-BINDING.
                                                                                                                                                                                                                                                                                                                                                                                                                   CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CALCIUM-BINDING CALCIUM-BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CALCIUM-BINDI
CALCIUM-BINDI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Polymorphism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EGF-like domain;
                                                                                                                                                                                              8666666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   នីនី
```

```
RESULT 11
XYNA_RUMFL
          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S
Matches · 49
                                                                                                                                                                                                                               XYNA_RUMFL
P29126;
01-DEC-1992
01-DEC-1992
28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DISULATION 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DISULFID DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DISULFID DISULFID DISULFID
      MEDLINE=92261318; PubMed=1584021; Zhang J.-X., Flint H.J.;
                                                                                                       Ruminococcus.
NCBI_TaxID=1265;
                                                                                                                                                 Ruminococcus flavefaciens
Bacteria; Firmicutes; Clos
                                                  STRAIN=17
                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                             XYNA.
                                                                                                                                                                                                              Bifunctional
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            l Similarity
49; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFT---
                                                                                                                                                                                                                                                                                                                                                                                                                SFQNICVSGTCNNLPGMFHCICDDGYELDRTGGNCTDIDECADPINCVN 1543
                                                                                                                                                                                                                                                                                                                                                                                                                                                        DV--IYVPGTDGN----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DECSNGTHQ---CSINAQCVN----TPGSYRCACSEGFTGDGFTC----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEAANGAHQDAWKSLKADVENVYYMVKATYK---NDPVWGNDFTCVGVMANDVNEDEKSI
                                                                                                                                                                                                        (Rel. 24, Created)
(Rel. 24, Last sequence update)
(Rel. 41, Last annotation update)
l endo-1,4-beta-xylanase XYLA prec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                 STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -NLCENGQC--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8.9%;
                                                                                                                                                 Clostridia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 83.5; D
Pred. No. 44;
l6; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        -EEGYEL-----WTTDYDNI--PANCLN 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Y SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----LNVPGAYRCECEMG--FTPASDSRSCQDIDEC
                                                                                                                                               Clostridiales;
                                                                                                                                                                                                                                                                                                               954
                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                          precursor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DВ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            45;
                                                                                                                                               Lachnospiraceae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 2911;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                            OH)
                                                                                                                                                                                                            3.2.1.8).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -DVIAYSD-DNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -SDVDECAENI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1456
  RPA2_DROME
ID RPA2_D
AC P20028
DT 01-FEB
DT 01-FEB
DT 15-JUL
DE DNA-di
                                                                                                                                                                                                                                              Qγ
                                                                                                                                                                                                                                                                                      B
                                                                                                                                                                                                                                                                                                                         QΥ
                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                     QΥ
                                                                                                                                                                                                          맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFFIFIER WERE RESERVED TO DESCRIPTION OF THE STREET OF TH
                                                                                                                                             RESULT
P20028;
01-FEB-1991 (
01-FEB-1991 (
15-JUL-1999 (
DNA-directed
```

```
Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro; IPRO01100; Glyco_hydro_10.
InterPro; IPR001137; Glyco_hydro_11.
pfam; pF00331; Glyco_hydro_10; 1.
pfam; pF00457; Glyco_hydro_11; 1.
pfam; pF00457; Glyco_hydro_11; 1.
prints; pR00134; GLHYDRLASE10.
prints; pR00911; GLHYDRLASE11.
SMART; SM00633; Glyco_10; 1.
SMART; SM00633; Glyco_10; 1.
pR0SITE; pS00571; GLYCOSYL_HYDROL_F10; 1.
pROSITE; pS00776; GLYCOSYL_HYDROL_F11_1; 1.
pR0SITE; pS00777; GLYCOSYL_HYDROL_F11_2; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DOMAIN
DOMAIN
DOMAIN
ACT_SITE
ACT_SITE
ACT_SITE
ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Repeat;
SIGNAL
CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "A bifunctional xylanase encoded by the xynA gene of the rumen cellulolytic bacterium Ruminococcus flavefaciens 17 comprises dissimilar domains linked by an asparagine/glutamine-rich sequence Mol. Microbiol. 6:1013-1023(1992).

-!- FUNCTION: XYLANASE DOMAIN 1 RELEASES MORE XYLO-OLIGOSACCHA
RPA2_DROME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; Z11127; CAA77476.1; PIR; S20907; S20907. HSSP; P48793; 1XND.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          use by non-profit institutions as long a
modified and this statement is not removed.
entitles requires a license agreement (See l
or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the Entropean Bioinformatics Institute. There are no restruse by non-profit institutions as long as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Xylan degradation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AND DOMAIN 2 MORE XYLOSE.
-I- CATALYTIC ACTIVITY: Endohydrolysis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PATHWAY: Xylan degradation.

SIMILARITY: IN THE N-TERMINAL SECTION;
G (FAMILY 11 OF GLYCOSYL HYDROLASES).

SIMILARITY: IN THE C-TERMINAL SECTION;
F (FAMILY 10 OF GLYCOSYL HYDROLASES).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                linkages in xylans.
                                                                                                                                                                    812
                                                                                                                                                                                                                                                                                                                                                                                                                                  722
                                                                                                                                                                                                                                     115
                                                                                                                                                                                                                                                                                                                                                                 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                    A---
                                                                                                                                                                                                          SDDNCDVIYVPGTDGNEEGYELWTTDYDNIPANC---LNKFNEYAVGRETRDVFTSA
                                                                                                                                                                                                                                                                                                      Z
H
                                                                                                                                                                                                                                                                                                                                  NEDEKSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNR--ENAFRYETEDGQVFTDVIAY 114 | | : | : | | : | : | | : | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | : | | : | : | | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | :
                                                                                                                                                                                                                                                                                                                                                                                                                                  PDWFFRENFSQNGAYVSKDIMNQRLESMIKNTFAALKSQYPNLDVYSYD-VC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PDW---ADEAANGAH--QDAW-KSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AA;
   STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             27
954
244
622
954
122
122
774
                                                                                                                                                                                                                                                                                                      LFLNNGG-GMRGA-DNSNWVKIYGDDSFVINAFKYARQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                111362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OR 28, OR 29 (POTENTIAL).
BIFUNCTIONAL ENDO-1,4-BETA-XXI
XYLANASE DOMAIN 1.
ASN/GLN/TRP-RICH (LINKER).
XYLANASE DOMAIN 2.
NUCLEOPHILE (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No. 14;
5; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 82.5;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PROTON DONOR (BY SIMILARITY)
PROTON DONOR (BY SIMILARITY)
NUCLEOPHILE (BY SIMILARITY).
   PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Glycosidase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1033567D4B526EBD CRC64;
   1129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (See http://www.isb-sib.ch/announce/
                                                                                                                                                                    -PAGCKLYLNDYNEY-IPAKTNDIYNMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of 1,4-beta-D-xylosidic
   Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MORE XYLO-OLIGOSACCHARIDES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ENDO-1, 4-BETA-XYLANASE XYLA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Multifunctional
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BELONGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BELONGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             comprises two
e-rich sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ne EMBL our restrictions cont is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CELLULASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CELLULASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 enzyme;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         collaboration
contstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               in no way commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FAMILY
                                                                                                                                                                                                                                                                                                                                                                                                                                     -
                                                                                                                                                                                                                                     168
                                                                                                                                                                                                                                                                                                                                                                                                                                  772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            56
```

(Rel. 17, Created)
(Rel. 17, Last sequence update)
(Rel. 38, Last annotation updat
(Rel. 38 polymerase I 135 kDa polyp

update) polypeptide

(EC

```
CICA_PAEPP
ID CICA_PAEPP
AC P57092;
DT 16-OCT-2001
DT 16-OCT-2001
                                                                                                                                                     Ş
                                                                                                                                                                                         밁
                                                                                                                                                                                                                     õ
                                                                                                                                                                                                                                                                                                                       RESULT 13
                                                                                                                               용
                                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 21
                                                                                                                                                                                                                                                                                                                                                                                              Pfam; PF04563; RNA_pol_Rpb2_2; 1.
Pfam; PF04565; RNA_pol_Rpb2_2; 1.
Pfam; PF04565; RNA_pol_Rpb2_5; 1.
Pfam; PF04567; RNA_pol_Rpb2_5; 1.
Pfam; PF04560; RNA_pol_Rpb2_6; 1.
Pfam; PF04560; RNA_pol_Rpb2_7; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE-90158499; PubMed-2482932;
Kontermann R., Sitzler S., Selfarth W., Petersen G., Bautz E.K.F.;
Kontermann Structure and functional aspects of the gene coding for the
second largest subunit of RNA polymerase III of Drosophila.";
Mol. Gen. Genet. 219:373-380(1989).
-I- FUNCTION: DNA-DEPENDENT RNA POLYMERASE CATALYZES THE TRANSCRIPTION
OF DNA INTO RNA USING THE FOUR RIBONUCLEDSIDE TRIPHOSPHATES AS
SUBSTRATES. RNA POLYMERASE I IS ESSENTIALLY USED TO TRANSCRIBE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL; x17298; CAA35185.1; -. PIR; JQ0354; JQ0354. FlyBase; FBgn0003278; RPI135. InterPro; IPR001572; RNA_pol_B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eukaryota; Metazoa; Arthropoda; Hexapoda; Insueoptera; Endopterygota; Diptera; Brachycera; Ephydroidea; Drosophilidae; Drosophila.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (KNA polymerase I subunit RPI135.
                                                                                                                                                                                                                                                                                                                       SEQUENCE
                                                                                                                                                                                                                                                                                                                                      Transferase; DNA-directed RNA polymerase; Transcription; Zinc; Zinc-finger; Nuclear protein.
ZN_FING 1061 1093 C4-TYPE (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Drosophila melanogaster (Fruit fly).
                                                                                                                                                                                                                                                                                                                                                                                   PROSITE; PS01166; RNA_POL_BETA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               III FOR 55 AND TRNA GENES.
SIMILARITY: Belongs to the RNA polymerase beta chain family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SUBCELLULAR LOCATION: Nuclear.
MISCELLANEOUS: THREE DISTINCT ZINC-CONTAINING RNA
FOUND IN EUKARYOTIC NUCLEI: POLYMERASE I FOR THE
PRECURSOR, POLYMERASE II FOR THE MRNA PRECURSOR,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SUBUNIT: EACH CLASS OF RNA POLYMERASE IS DIFFERENT POLYPEPTIDES. THIS SUBUNIT IS 1 COMPONENT OF RNA POLYMERASE I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RIBOSOMAL DNA UNITS.

CATALYTIC ACTIVITY: N nucleoside triphosphate - N diphosphate +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RNA)(N).
                                                                                                                               218
                                                                                                                                                                                            158
                                                                                                                                                                                                                         11
                                                                                                                                                             60
                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                             EKSIQAEFLEMNNADTNMQFATEK
                                                                                                                                                                                           HGEHDSEWGGIFVIRGNEKIVRMLIMTRRNHPICVKRSSWKDRGQNFSDLGMLVQTVRED
                                                                                                                                                                                                                            NGAHQDAWKSLKA--DVENVYYMVKATYKNDPV-----W---GNDFTCVGVMANDVNED
                                                                                                                               ESSLSNVVHYLNNGTAKFMFSHVK
                                                                                                                                                                                                                                                                                                                     1061 10
1129 AA;
 (Rel.
                                                                                                                                                                                                                                                          Conservative
                                                STANDARD;

    Created)
    Last sequence update)

                                                                                                                                                                                                                                                                       8.7%;
                                                                                                                                                                                                                                                                                                                       128414 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2)
                                                                                                                                                                                                                                                          15;
                                                                                                                                                                                                                                                                         Score 81.5;
Pred. No. 22;
                                                 PRT;
                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                       EOA15FF1BCEF18D7
                                                                                                                                                             83
                                                695
                                                 ξ
                                                                                                                                                                                                                                                                                        DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Insecta; Pterygota;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   THE SECOND LARGEST
                                                                                                                                                                                                                                                       37;
                                                                                                                                                                                                                                                                                      1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Muscomorpha;
                                                                                                                                                                                                                                                                                      Length 1129;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RNA
                                                                                                                                                                                                                                                                                                                       CRC64;
                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A POLYMERASES RIBOSOMAL RNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          POLYMERASE
                                                                                                                                                                                                                                                        11;
                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     14
                                                                                                                                                                                                                          59
                                                                                                                                                                                            217
```

```
RESULT
FBN2_MC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         무
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SERRE RESERVACION CON CONTRA RESERVACION CONTRA RESERV
ROCCOSSEDER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                               FBN2_MOUSE STANDARD
Q6155; Q63957;
15-DEC-1998 (Rel. 37, C
15-DEC-1998 (Rel. 37, I
28-FEB-2003 (Rel. 41, I
Fibrillin 2 precursor.
FBN2 OR FBN-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Patel R., Yousten A.A., Rippere K.;

"Detection of two new cry genes in Paenibacillus popilliae.";

Submitted (JUL-1999) to the EMBL/GenBank/DDBJ databases.

-I- FUNCTION: BINDS TO THE BRUSH BORDER MEMBRANE VESICLES OF SCARAB

LARVAE AND DAMAGES THE GUT WALL SOMEHOW TO ALLOW THE VEGETATIVE

CELLS OF P.POPILLIAE TO ENTER THE HEMOLYMPH (BY SIMILARITY).

CELLS OF P.POPILLIAE TO ENTER THE HEMOLYMPH (BY SIMILARITY).

-I- DEVELOPMENTAL STAGE: THE CRYSTAL PROTEIN IS PRODUCED DURING

SPORULATION AND IS ACCUMULATED BOTH AS AN INCLUSION AND AS PART

OF THE SPORE COAT (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                  LT 14
MOUSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A. STRAIN-ATCC 14706;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             16-OCT-2001 (Rel. 40, Last annotation update)
Parasporal crystal protein cry18Ca (Paraspora
CryXVIIC(a)) (Crystaline parasporal protoxin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Paenibacillus popilliae (Bacillus Bacteria; Firmicutes; Bacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CRY18CA OR CRYXVIIIC(A).
                    Mus musculus (Mouse).
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pfam; PF03944; endotoxin_C;
Pfam; PF03945; endotoxin_N;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL; AF169251; AAF89668.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              <del>:</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SIMILARITY: BELONGS TO THE DELTA ENDOTOXIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            402
                                                                                                                                                                                                                                                                                                                                                                                                                                                   462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    45;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sporulation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                VFIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VFTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NYVLSGVSGYAM-RWSYTNPF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTELDQLVQQQARADIPVDFTQIPINCTLRNPLEVPYYATRFNELTSLGTAGVGGFVRSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WSLLK--YVNLYVSTSANLYN-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKSIQAEFLFMNNADTNM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TT------LNKFNEY-----AVGRETR-D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCDVIYVPGTDGNEEGYELW 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IPR005638; endotoxin_C.
IPR005639; endotoxin_N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                695 AA;
                                                                                                                                                               precursor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     167
                                                                                                                                                                                                                                                                                                     STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                78259 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8.5%;
24.5%;
                                                                                                                                                                                            Last sequence u
                                                                                                                                                                                                                    Created)
Last sequ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                n cry18Ca (Parasporal parasporal protoxin)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 80; DB
Pred. No. 16;
13; Mismatches
                                              Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                406AC9154D75E070 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -----FGEYIQDHLYNITASYIGGVNGPQIGQQLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     popilliae).
Paenibacillaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -----IGDNKVNEGEYSISYWPFFNTYIQTKS
                                                                                                                                                                                                                                                                                                           2907
                                                                                                                                                                                                                                                                                                           B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   delta-endotoxin
(78 kDa crystal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 695;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Paenibacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
```

```
THE THE TETRET TO THE TETRET WAS ARRESTED TO THE TETRET WAS ARRESTED TO THE TETRET TO THE TETRET WAS ARRESTED TO THE TETRET TO THE TETRET WAS ARRESTED TO THE TETRET TO THE TETRET TO THE TETRET WAS ARRESTED TO THE TETRET TO THE TE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; L39790; AAA74908.1; -.
EMBL; S69359; AAC60685.1; -.
PIR; A57278; A57278.
HSSP; P35555; 1EMN.
MGD; MGI:95490; FbD2.
GO: GO:0030326; P:limb morphogenesis; IM
InterPro; IPR00152; Asx_hydroxyl.
InterPro; IPR001481; EGF_Ca.
InterPro; IPR001481; EGF_Like.
InterPro; IPR006209; EGF_like.
InterPro; IPR002212; Fibril-assoc.
Pfam; PF00008; EGF; 45.
Pfam; PF00008; EGF; 45.
PRINTS; PR0010; EGFEDCOD.
SMART; SM00179; EGF_CA; 43.
PROSITE; PS01186; EGF_1; 2.
PROSITE; PS01187; EGF_CA; 43.
EXTRACELULAR MALTIX; CALcium-binding; G
EXERCAL MALTIX; GALcium-binding; G
EXERCAL MALTIX; GALcium-binding; G
      Repeat;
SIGNAL
CHAIN
DOMAIN
REPEAT
DOMAIN
DOMAIN
REPEAT
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       modified
entities
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This SWI
between
the Euro
use by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Fibrillin genes map to regions of conserved mouse/human synteny on mouse chromosomes 2 and 18.";
Genomics 18:667-672(1993).
-I- FUNCTION: STRUCTURAL COMPONENT OF CONNECTIVE TISSUE MICROFIBRILS FIRST BINDS CALCIUM, FIBRILIN-1-CONTAINING MICROFIBRILS PROVIDE LONG-TERM FORCE BEARING STRUCTURAL SUPPORT.
-I- SIMILARITY: Contains 47 EGF-like domains.
-I- SIMILARITY: Contains 7 TGF-beta binding protein (TGFBP) domains.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Francke U.; "Fibrillin o
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
MEDILINE-95263670; PubMed-7744963;
Zhang H., Hu W., Ramirez F.;
"Developmental expression of fibrillin
of extracellular microfibrils.";
J. Cell Biol. 129:1165-1176(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE OF 210-317 FROM N.A.
MEDLINE-94140368; PubMed-8307578;
Li X., Pereira L., Zhang H., Sanguineti
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  send
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ween the
European
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SWISS-PROT entry is copyright. It is produced through the swiss Institute of Bioinformatics and the produced through the swiss Institute. There are no rest by non-profit institutions as long as its content of and the state of the swing as its content of 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   , Pereira
ke U.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Signal;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                an email to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         non-profit institu
      Multigene
1 2907
1 142
176
1776
208
317
317
315
317
359
426
657
650
650
650
650
650
650
650
691
760
802
844
883
989
1065
1107
11150
11150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              license agreement (S license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Calcium-binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               fami
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TGF-beta binding protein (TGFBP) domains
      mily.
POTENTIAL.
FIBRILLIN:
EGF-LIKE 1
EGF-LIKE 2
EGF-LIKE 4.
EGF-LIKE 5.
TGFBP 1.
EGF-LIKE 6
EGF-LIKE 6
EGF-LIKE 7.
EGF-LIKE 9
EGF-LIKE 1
TGFBP 2.
EGF-LIKE 1
TGFBP 3.
EGF-LIKE 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   is not removed.
agreement (See )
                                                                                                                                                                                                                                    6.
7,
9,
        15,
18,
19,
19,
                                                                                                                                                                                                                                                                                                                                                            5,43.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Glycoprotein; EGF-like domain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           genes suggests heterogeneity
                                                                                                                                                                                                                                                       , CALCIUM-BINDING.
, CALCIUM-BINDING.
    CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
                                                                                                                                                                                                                                                                                                                                                               CALCIUM-BINDING CALCIUM-BINDING
                                                                                                                            CALCIUM-
CALCIUM-
CALCIUM-
                                                                                                                                                                                                                                      CALCIUM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ramirez
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Usage
                                                                                                                            M-BINDING
M-BINDING
M-BINDING
                                                                                                                                                                                                                                      -BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   through
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           γď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ή
:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gh a collaboration EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         way
cial
      DOMAIN
DO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DOMAIN
DOMAIN
DOMAIN
DOMAIN
      115484
115484
116433
116433
116433
116433
116433
116433
116432
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
11643
116
      EGF-LIKE 20, CLEGF-LIKE 21, CLEGF-LIKE 23, CLEGF-LIKE 23, CLEGF-LIKE 24, CLEGF-LIKE 26, CLEGF-LIKE 26, CLEGF-LIKE 27, CLEGF-LIKE 27, CLEGF-LIKE 28, CLEGF-LIKE 29, CLEGF-LIKE 31, CLEGF-LIKE 31, CLEGF-LIKE 31, CLEGF-LIKE 33, CLEGF-LIKE 34, CLEGF-LIKE 34, CLEGF-LIKE 34, CLEGF-LIKE 34, CLEGF-LIKE 41, CLEGF-LIKE 41, CLEGF-LIKE 42, CLEGF-LIKE 42, CLEGF-LIKE 44, CLEGF-LIKE 45, CLEGF-LIKE 47, CLEGF-LI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
CALCIUM-BINDING.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CALCIUM-
CALCIUM-
CALCIUM-
CALCIUM-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CALCIUM-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        M-BINDING.
M-BINDING.
M-BINDING.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -BINDING
```

```
RESULT
ITB4_HU
                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
Matches 49
                                                                                                                                                                 JLT 15
HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DISULFID
DISULFID
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
                                                         TTB4_HUMAN STANDARD; PRT; 1822 AA. P16144; O14690; O1691; O15339; O15340; O15341; Q9 O1-APR-1990 (Rel. 14, Created)
16-OCT-2001 (Rel. 40, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Integrin beta-4 precursor (GP150) (CD104 antigen).
Homo sapiens (Human).
Eukaryota; Metazoa; Chordata;
Mammalla; Eutherla; Primates;
NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                      1450
                                                                                                                                                                                                                                                                                                                                               1403
                                                                                                                                                                                                                                                        120
                                                                                                                                                                                                                                                                                                                  64
                                                                                                                                                                                                                                                                                                                                                                             7
                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                              DECANGTHQ---CSINAQCVN----TPGSYRCACSEGFTGDGFTC----
                                                                                                                                                                                                                           SFQNICVFGTCNNLPGMFHCICDDGYELDRTGGNCTDIDECADPINCVN
                                                                                                                                                                                                                                                       DV--IYVPGTDGN-----
                                                                                                                                                                                                                                                                                                                QAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFT--
                                                                                                                                                                                                                                                                                                                                                                           DEAANGAHQDAWKSLKADVENVYYMVKATYK---NDPVWGNDFTCVGVMANDVNEDEKSI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8.5%;
29.0%;
                                                                                                                                                                                                                                                                                                                                                                                                         15;
                                                                                                                                                                                                                                                                                                                                                                                                                       Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SIMILARITY
                                                                                                                                                                                                                                                       EEGYEL----WITDYDNI--PANCLN
                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                    ----LNVPGAYRCECEMG---FTPASDSRSCQDIDEC
                                                                                                                                                                                                                                                                                                                                                                                                                       79.5;
No. 98;
                                                                                                                                                                                                                                                                                                                                                                                                                                     DB
                                                                                                                                                                                                                                                                                                                                                                                                         46;
                                                                                                                                                                                                                                                                                                                                                                                                                                   ۲.
                                                                                                                                    Q9UIQ4;
                                                                                                                                                                                                                                                                                                                                                                                                                                   Length
                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                      2907;
                                                                                                                                                                                                                                                                                                                  -DVIAYSD-DNC
                                                                                                                                                                                                                                                        150
                                                                                                                                                                                                                                                                                                                                               -SDVDECAEN-
                                                                                                                                                                                                                                                                                                                                                                                                         59;
                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                      1488
                                                                                                                                                                                                                                                                                                                                              1449
                                                                                                                                                                                                                                                                                                                  119
                                                                                                                                                                                                                                                                                                                                                                           63
   [1]
SEQUENCE FROM N.A. (ISOFORM MEDLINE-90189973; PubMed-23 Suzuki S., Naitoh Y.;
"Amino acid sequence of a nexpression of the mRNA in eemBO J. 9:757-763(1990).
                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=97350870; Pu
van Leusden M.R., Ku
"The unique outon
                                                                                                                                                                                                                                                                                                                                                                                                                                                    D'Alessio
Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Tamura R.N., Rozzo C., Starr L., C
Cooper H.M., Quaranta V.;
"Epithelial integrin alpha 6 beta
alpha 6 and variant forms of beta
J. Cell Biol. 111:1593-1604(1990).
                                                                                                                                              ALTERNATIVE SPLICING (ISOFORM BETA-MEDILUS-95073005; PubMed=7982032; Clarke A.S., Lotz M.M., Mercurio A. "A novel structural variant of the Cell Adhes. Commun. 2:1-6(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Iacovacci S., Gagnoux-
D'Alessio M.;
"Genomic organization
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mamm.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A. (ISOFORMS BETA-4A; MEDLINE-97338298; PubMed-9194858;
                                                                                                    VARIANTS EB-PA TYR-61; CYS-252; A
MEDLINE-99011257; PubMed-9792864;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TISSUE-Lung;
MEDLINE-97311186;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE-91009492;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REVISIONS
                                                                                                                                                                                                                                                                                                                                 8
                 <u>.</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Genome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3
                                                                                                                                                                                                                                                                                                                                                                                                                                                 (NOV-1999)
               Genet.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8:448-450(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gagnoux-Palacios
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PubMed=2311577;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PubMed=9166594;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PubMed=1976638;
                                                                                                                                                                                                                                                                                                                                                                                         PubMed=9207246;
Kuikman I., Son
                                                                                                                                                                                                                                                                                                                                                                                                                       (ISOFORM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (ISOFORMS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (ISOFORM BETA-4C).
                 63:1376-1387(1998)
                                                                                                                                                                                                                                                                                                                                                                                                                                                   ដ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                   the
                                                                                                                                                                                                                                                                                                                                                                                                                     BETA-4E).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BETA-4A;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ۲.,
                                                                                                                                                                               ĸ
```

ő

밁

Ş

В Ş

В

```
Pulkkinen L., Rouan F., Bruckner-Tuderman L., Wallerstei Garzon M., Brown T., Smith L., Carter W.G., Uitto J.; "Novel ITGB4 mutations in lethal and nonlethal variants epidermolysis bullosa with pyloric atresia: missense ver nonsense.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pulkkinen L., 'Kurtz K.S., Xu Y., Bruckner-Tuderman L., Uitto "Genomic organization of the integrin beta 4 gene (ITGB4): a homozygous splice-site mutation in a patient with junctional epidermolysis bullosa associated with pyloric atresia."; Lab. Invest. 76:823-833(1997).
                                                                                                                                                                                                                                                                                   SEQUENCE OF 28-46.
MEDLINE-89251596; PubMed=2542022;
Kajiji S., Tamura R.N., Quaranta V.;
Kajiji S., Tamura (alpha E beta 4) from human
"A novel integrin (alpha E beta 4) from human
suggests a fourth family of integrin adhesion
EMBO J. 8:673-680(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                          van Leusden M.R., Kuikman I., Sonnenberg A.; "The unique cytoplasmic domain of the human integrin variant beta4E produced by partial retention of intronic sequences."; Biochem. Biophys. Res. Commun. 235:826-830(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A. (ISOFORM BETA-4B). MEDLINE-90183974; PubMed-2311578; Hogervorst F., Kuikman I., von Dem Borne A "Cloning and sequence analysis of beta-4 c that contains a unique 118 kd cytoplasmic EMBO J. 9:765-770(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                novel integrin beta epithelial cells.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                    BETA-4D)
                                                                                                                           ARG-562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Chambers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4: complete
4.";
                                                                                                                                                                                          human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             integrin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Zambruno
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BETA-4B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BETA-4B
                                                                                                                           AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A.E.G.
                                                                                                                                                                                          beta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        cDNA: an domain."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  G.,
                                                                                                                             TRP-1281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               beta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4
                                                                                  Wallerstein
                                                                                                                                                                                        4 integrin
                                                                                                                                                                                                                                                                                                                 epithelial cells receptors.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   primary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Reichardt
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        subunit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Meneguzzi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sonnenberg A.;
integrin subunit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BETA-4C)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BETA-4C).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            L.F.,
                                             of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          and
                                                                                                                                                                                          CDNA. ;
                                                                                      R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        primary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     of
f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1s
```

```
VARIANTS EB-PA.
WARLIANTS EB-PA.
MEDLINE=21149723; PubMed=11251584;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Compound
mutations
      -
                                                                                                                         correlations."
Pediatr. Res.
                                                                                                                                                                                                                                                                                                VARIANTS EB-PA TYR-131; CYS-252; AS AND HIS-1225, AND VARIANT GLN-1216. MEDLINE-21226999; PubMed-11328943;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VARIANT EB-PA TRP-1281.

MEDLINE=20334107; PubMed=10873890;

MEDDINE=20334107; PubMed=10873890;

MEDDINE=20334107; PubMed=10873890;

MEDDINE=20334107; PubMed=10873890;

Markowitz G.

Markowitz G.

Mitto J., Markowitz G.

M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              mild
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mellerio J.E., Pulkkinen L., McMillan J.R., Lake B.D., Horn H.M., Mellerio J.E., Pady R.A.J.; Tidman M.J., Harper J.I., McGrath J.A., Uitto J., Eady R.A.J.; "Pyloric atresia-junctional epidermolysis bullosa syndrome: mutations in the integrin beta4 gene (ITGB4) in two unrelated patients with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VARIANT EB-PA GLY-245.

WEDLINE-98082996; PubMed-9422533;

Pulkkinen L., Kim D.U., Ultto J.;

Pulkkinen L., Kim D.U., Ultto J.;

"Epidermolysis bullosa with pyloric atresia: novel mutations in beta-4 integrin gene (ITGB4).";

beta-4 integrin gene (ITGB4).";

pan. J. Pathol. 152:157-166(1998).
                                                                                                                                                                                                                                                  Stevens
                                                                                                                                                                                                                                                                        Nakano A., Pulkkinen L., Murrell D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Hirano
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VARIANTS HIS-98 A MEDLINE-21183353;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 [12]
                                                                                                                                                                                                                                                                                                                                                                                                                                                         (ITGB4)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  bullosa with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Inoue M., Tamai K., McGrath J.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WARIANT GABEB ASP-931.
MEDLINE-20255363; Pub.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Br. J.
                                                                                                                                                                                                                   "Epidermolysis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Alpha 6 beta 4 integrin abnormalities
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                non-Herlitz junctional
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "A homozygous missense mutation
integrin, G931D, that disrupts }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=99111354; PubMed=9892956;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ã.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                nonlethal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pulkkinen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WARIANT EB-PA PRO-156.
MEDLINE=98206430; Pub
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the integrin beta4 gene (ITGB4) in ld disease.";
                                                           iatr. Res. 49:618-626(2001).
FUNCTION: INTEGRIN ALPHA-6/BETA-4
PLAYS A CRITICAL STRUCTURAL ROLE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Invest.
EPITHELIAL CELLS.
SUBUNIT: HETERODIMER OF AN
                                                                                                                                                                                                                                                                                                                                                                                                                       novel single-nucleotide polymorphisms.
4) gene in the Japanese population.";
m. Genet. 46:35-37(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Α.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Dermatol. 139:862-871(1998).
                                                                                                                                                                                                                                                  C.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EB-PA ARG-38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8206430; PubMed=9546354;
L., Bruckner-Tuderman L., August C.,
heterozygosity for missense (L156P)
in the beta-4 integrin gene (ITGB4)
phenotype of epidermolysis bullosa w
thol. 152:935-941(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Dermatol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nagai
                                                                                                                                                                                    the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   pyloric atresia.";
col. 144:408-414(2001).
                                                                                                                                                                             lkkinen L., Murrell D., Rico J., Lucky A.W., Robertson S., Pfendner E., Vitto J., s bullosa with congenital pyloric atresia: no the beta 4 integrin gene (ITGB4) and genotype
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AND LEU-844.
3; Pubmed=11289717;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PubMed-10792571;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Shimizu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            114:1061-1064(2000).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Harada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                e mutation in the cytoplasmic disrupts hemidesmosome assemble epidermolysis bullosa without
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mellerio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Η.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Η.,
ALPHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Terada Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Owaribe K., Nakama
                                                                                                                                                                                                                                                                                                                                                               ASP-273;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         <u>.</u>
                                                    IN
   AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              in
   Þ
                                                                                          Þ
                                                                                                                                                                                                                                                                                                                                                                  CYS-283;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 junctional
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Keane F.M.,
   BETA
                                                                                          RECEPTOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Haga
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     in
                                                                 HEMIDESMOSOME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ) and nonsense (RE) underlies mild, with pyloric atr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Lasmic tail of beta4 assembly and underl. without pyloric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .s
;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 associated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                s;
   SUBUNIT.
                                                                                                                                                                                 genotype/phenotype
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Τ.,
                                                                                                                                                                                                                                                                                                                                                                  ASP-325;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     integrin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pulkkinen
                                                                                          FOR LAMININ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Kajiwara
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 epidermolysis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eady R.A.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Hashimoto
                                                                                                                                                                                                                novel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              with
                                                                                                                                                                                                                                                                           Garzon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          atresia.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   underlies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (R554X)
                                                                                                                                                                                                                                                                                                                                                               PRO-336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     beta4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 beta4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  the
                                                                                                                                                                                                                                                                           .
.
                                                                                          H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .
```

 $\mathsf{CCCCCCCCCCR}_{\mathsf{CP}}$

SUBCELLULAR

LOCATION:

Type

н

membrane

protein

Search completed: August Job time: 13.4229 secs

۲,

2003,

12:15:51

ASSOCIATES WITH ALPHA-6

```
밁
                         Qy
                                                                                        Q
                                                                                                                      밁
                                                                                                                                                     Ş
                                                                                                                                                                                                                                                밁
                                                                                                                                                                                   Query Match
Best Local S
Matches 28
                                                                                                                                                                                                                                               modified entities
                                                                                                                                                                                                                                                                                            the
                                                                                                                                                                                                                                                                                                         This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     --
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -
                                                                                                                                                                                                                                                                               use
                                                                                                                                                                                                                                                                                                                                                                 ABNORMALITIES.

SIMILARITY: BELONGS TO THE INTEGRIN BETA CHAIN SIMILARITY: Contains 4 fibronectin type III dom SIMILARITY: Contains 2 WWFA-like domains.

CAUTION: REF. 3 SEQUENCE DIFFERS FROM THAT SHOWN TO 1429 DUE TO A FRAMESHIFT.

DATABASE: NAME-PROW; NOTE-CD guide CD104 entry;
                                                                                                                                                                                                                                                                                          ween the Swiss Institute of Bioinf
European Bioinformatics Institute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MOST COMM
DISEASE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LUNG, DUODENUM, HEART, SPLEEN AND STOMACH.

DOMAIN: THE FIBRONECTIN TYPE III-LIKE DOMAINS BIND BPAGI AND PLECTIN AND PROBABLY ALSO RECRUIT BP230.

DISEASE: DEFECTS IN ITGB4 ARE A CAUSE OF EPIDERMOLYSIS BULLOSA LETALIS WITH PYLORIC ATRESIA (EB-PA), ALSO KNOWN AS JUNCTIONAL EPIDERMOLYSIS BULLOSA WITH PYLORIC ATRESIA (PA-JEB) OR APLASIA CUTIS CONGRENITA WITH GASTROINTESTINAL ATRESIA. IT IS CHARACTERIZED BY MUCOCUTANEOUS FRAGILITY AND GASTROINTESTINAL ATRESIA, WHICH MOST COMMONLY AFFECTS THE PYLORUS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ISOId=P16144-5; Sequence=VSP_002747, VSP_002748; TISSUE SPECIFICITY: INTEGRIN ALPHA-6/BETA-4 IS PREDOMINANTLY EXPRESSED BY EPTHELIA. ISOFORM BETA-4D IS ALSO EXPRESSED IN AND PLACENTA. ISOFORM BETA-4E IS ALSO EXPRESSED IN EPIDERMIS.
                                                                                                                                                                                                                                                                                                                                            WWW-"http://www.ncbi.nlm.nih.gov/prow/cd/cd104.htm"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DISEASE: DEFECTS IN ITGB4 ARE A CAUSE OF GENERALIZED BENIGN EPIDERMOLYSIS BUILLOSA (GABEE). THIS NOWLETHAL JUNCTIONAL EPIDERMOLYSIS BULLOSA IS CHARACTERIZED BY BLISTERING OF THE SKIN, ASSOCIATED WITH HAIR AND TOOT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ALTERNATIVE PRODUCTS:
Event-Alternative spl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Name-Beta-4E;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Name=Beta-4D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Name=Beta-4A;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Name-Beta-4C
                                                                                                                        194
308
                                                             254
                                                                                           85
                                                                                                                                                       42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IsoId=P16144-4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IsoId=P16144-3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IsoId=P16144-1;
                                                                                                                                                                                                   Similarity
 ъ
                                סי
                                                                                                                                                                                                                                        non-profit institutions as long as its content is in no way and this statement is not removed. Usage by and for commercial requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                              WPNSDPPFSFKNVISLTEDVDEFRNKLQGERISGNLDAPEGGFDAILQTAVCTRDIGWRP
                                                                                                                                          WGN----DFTCVGVMANDVNEDEKSIQAEFLFMN-----
                                                             DSTHLLVFSTESAFHYEADGANVLAGIMSRNDERCHL:
 308
                                                                                                                                                                                     Conservative
                                                                                                                                                                                                  8.4%;
23.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                splicing;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence=VSP_002749,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence-VSP_002749
                                                                                                                                                                                     20;
                                                                                                                                                                                                  Pred.
                                                                                                                                                                                                   Score 78.5;
Pred. No. 6
                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Named isoforms=5;
                                                                                                                                                                                                     69;
                                                                                                                                                                                                                                                                                         There are no
                                                                                                                                                                                                                DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VSP_002751;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VSP_002750;
                                                                                                                                                                                   50;
                                                                                                                                                                                                                                                                                                                                                                                                   SHOWN IN POSITIONS
                                                                                                                                                                                                                                                                                                                                                                                                                                 domains
                                                                                                                                                                                                                Length 1822;
                                                             -DTTGTYTQYR--TQDYPSV
                                                                                                                                                        -NADTNMQFAT----
                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                FAMILY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TOOTH
                                                                                                                                                                                                                                                                                          he EMBL outstation restrictions on it
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FORM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ATROPHIC
                                                                                                                                                                                                                                                                                                                          ω
                                                                                                                                                                                   23;
                                                                                                                                                                                                                                                                                                              collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ç
                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COLON
                                                                                                                                                        ĖKV
                                                             307
                                                                                         144
                                                                                                                      253
                                                                                                                                                                                   G
```

```
Regult
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score
        105
88
86.5
885.5
885.5
885.5
884.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
883.5
799.5
799.5
799.5
799.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
798.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-087-195-7
936
1 NQPDWADEAANGAH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PIR_76:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    August 1, 2003, 12:15:04; Search time 12.7029 Seconds (without alignments) 1294.578 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           283308 seqs, 96168682 residues
        NQPDWADEAANGAHQDAWKS.....FNEYAVGRETRDVFTSACLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             pir1:*
pir2:*
pir3:*
pir4:*
        H3817
H97012
T18282
AC1583
AB1347
A54105
S57962
S57962
S57962
S20907
JC033
H301637
T51637
T51637
H30748
H30747
H30747
T51637
T51637
H30747
H30747
H30747
H30747
H30747
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SUMMARIES
hypothetical prote hypothetical protein protein protein protein protein protein protein protein probable peptidogladenylate cyclase fibrillin-2 precur cspc protein - Clo endo-1.4-beta xyla DNA-directed RNA pmyb-related transc probable MYB famil hypothetical protein protein protein alp vitellogenin - Athen Spm-like transp lipoprotein [impor integrin beta-4 printegrin beta-4 printegrin beta-4 ch L-lactate dehydrog hypothetical protein pypothetical pypothet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           glucosyltransferas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Description
```

RESULT 2 H82891

P 60 B

-----TDYDNIPANCLNKF 152 | ||: | ||| NDTPYLHDDGDNL-MNMDNKF 509

-DSIRVDAED-NVDADQLQISSDYLKAAY--GIDKNNKNANNHVSIVEAWSD 489

hypothetical protein UU441 [imported] - Ureaplasma urealyticum C;Species: Ureaplasma urealyticum C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 20-Aug-2000 C;Accession: H82891

RESULT 1 A38175 glucosyltra, C; pecies: 28-, C; Date: 28-, C; Accession R; Abo, H:; I J. Bacterio. A; Title: Pel A; Recession A; Status: Pl A; Molecule A; Accession A; Status: Pl A; Molecule: Pel A; Residues: Pl A; Molecule: Pl A; Residues: Pl A; Molecule: Pl A; Molecul	444443333333 54432133765443210
Note that the state of the stat	77.5 8 77.5 8 77.5 8 77.5 8 77.8 7 77 8 77 8 77 8 76.5 8 76.5 8 76.5 8 76.5 8
erase precursor - Streptococcus sobrinus [1922 #sequence_revis] [38175	1026 1659 1659 1659 1256 256 256 256 256 256 256 256 256 256
ALI ision ision r.; Ob crose 911232 mology	2 A49750 2 H97926 2 G95057 2 A59103 2 E89769 2 E89769 2 F9734385 2 F9734385 2 F9734864 2 F9734864 2 F9734864 2 F9734864 2 F9734864 2 F7734864 2 F7734864 2 F773663
ALIGNMENTS ALIGNMENTS ptococcus sobrinus on 28-Aug-1992 #te Ohta, H.; Fukui, se splitting and g 23227; pMID:170400 217032; PIDN:BAA14 ogy <cp1> ogy <cp2> ogy <cp5> ogy <cp5- <cp5-="" <cp5-<="" ogy="" td=""><td></td></cp5-></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp5></cp2></cp1>	
s sobrinus g-1992 #text_change 1 g-1992 #text_change 1 fing and glucan bindi MID:1704006 PIDN:BAA14241.1; PID: DB 2; Length 1592; DB 2; Length 1592; 0.52; 55; Indels 7 ADVENVYYMV hes 55; Indels 7 ADVENVYYMV	bett hypp ende hypo hypo hypo hypo uncl hypo hypo tox: rever proi rever earr DNA nitra
t_change 15-Oct-1999 .; Kato, K.; Kagawa, ucan binding within indels 76; Gaps	y galactos bthetical beta N-c beta N-c bthetical bthetical aracteria aracteria bthetical bthetical chelical bthetical bthetical bthetical bthetical chelical chelical chelical
Cct-1999 Kagawa, H. within Streptococ within Streptococ 11, Gaps 12; RATYK-N 38 NTEKVTA 86 441 441 441 441	lidase prote prote prote prote prote prote prote prote co prote

```
RESULT 4
T18282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 3
H97012
hypothetical protein CAC0915 [imported] - Clostridium acetobutylicum C;Species: Clostridium acetobutylicum C;Species: Clostridium acetobutylicum C;Species: 14-Sep-2001 #sequence_revision 14-Sep-2001 #text_change 14-SeC;Accession: H97012
R;Molling, J; Breton, G.; Omelchenko, M.V.; Markarova, K.S.; Zeng, (R;Molling, J; Breton, G.; Omelchenko, E.V.; Smith, D.R.
R;Rieben Jr., W.K.; Gonzales, C.M.; Gonzales, S.T.; Pilkington, K.J.; Kiyosawa, Genetics 148, 1117-1125, 1998
A;Title: Dictyostelium discoideum nuclear plasmid Ddp5 is a chimera related to t
                                                           hypothetical protein G6 - slime mold (Dictyostelium discoideum)
C;Species: Dictyostelium discoideum
C;Date: 15-Oct-1999 #sequence_revision 15-Oct-1999 #text_change
C;Accession: T18382; S28718
                                                                                                                                                                                                                                                               ρ
                                                                                                                                                                                                                                                                                                                뫄
                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Molecule type: DNA
A; Residues: 1-606 < KUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Title: Genome Sequence and Comparative Analysis of the A;Reference number: A96900; MUID:21359325; PMID:21359325 A;Accession: H97012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   R;Nolling, J.; Breton, G.; Omelchenko, M.V.; Markarova, Daly, M.J.; Bennett, G.N.; Koonin, E.V.; Smith, D.R. J. Bacteriol. 183, 4823-4838, 2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Cross-references: GB: AE001437; PIDN: AAK78891.1; A; Experimental source: Clostridium acetobutylicum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Genetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Gene: UU441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Molecule type: DNA
A;Residues: 1-450 <GLA>
A;Cross-references: GB:AE002140; GB:AF222894; NID:g6899420;
A;Experimental source: serovar 3; biovar 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           R;Glass, J.I.; Lefkowitz, E.J.; Glass, J.S.; Heiner, C.R.; Chen, submitted to GenBank, February 2000
A;Description: The complete sequence of Ureaplasma urealyticum: AA;Reference number: AB2870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
Matches 27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAC0915
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               code:
                                                                                                                                                                                                                                                                            115
                                                                                                                                                                                                                                                                                                                  40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19
                                                                                                                                                                                                                                                                                                                                                                                                Similarity 27; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            l Similarity
37; Conser
                                                                                                                                                                                                                                                                       SDDNCDVIYVPGTDGNEEGYELWTTDYD-----NIPANCLNKFNE
                                                                                                                                                                                                                                                                                                                DTNAEKQAI-SPYIY----GTNQDFSNAKVTA-RRIGGNRSTGYNWENNDSNA----
                                                                                                                                                                                                                                                                                                                                                      DVNEDEKSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAY 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NKNGHILEINWFDISKYSFMDRFNQNSIYVGSTNKNNE 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TEDGQV----FTDVIAYS---DDNCDVIYVPGTDGNEE 132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FKRELKKYIDTLNKDDIVNNTINKYKFKNYIYDFISYYFDIINIFSAGNSYNDE--IRYR 132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DETSENSHIKIWKELDWLIQNDVKIINHSYGWSP---NDFLNIGFYNFINGKEIN-DDKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVG----VMANDVNEDEKS 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SGC3
                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                 GTDWKNESDNYWLTLYDVPKEKYNEPASVYTAFHD
                                                                                                                                                                                                                                                                                                                                                                                                                    9.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ----FMNNADTNMQFATEKVTAVKMY------
                                                                                                                                                                                                                                                                                                                                                                                                15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 91; DB Pred. No. 1.9;
                                                                                                                                                                                                                                                                                                                                                                                                               Score 88; I
Pred. No. 5;
                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14-Sep-2001 #text_change 14-Sep-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                     _DB 2; Length 606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2
                                                                                                                                                                                                                                                                                                                                                                                              34; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PID:g15023815;
ATCC824
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            60;
                                                                                #text_change 01-Dec-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Solvent-Producing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PIDN: AAF30853.1; GSPDB: GN001
                                                                                                                                                                                                                                                                         154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   --GYNRENAFRYE 101
                                                                                                                           plasmid
                                                                                                                                                                                                                                                                                                                                                                                              30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alternate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GSPDB:GN00168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     E.Y.; Cassell,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q.; Gibson,
                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               views
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bacterium
    the
                                          Η.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ₽:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       G.H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 മ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Lee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 mir
Ş
                                        망
                                                                            δÃ
                                                                                                                       망
                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                science 294, 849-852, 2001
A; Authors: Kreft, J.; Kuhn, M.; Kunst, F.; Kurapkat, G.; Madueno, ok, C.; Schlueter, T.; Simoes, N.; Tierrez, A.; Vazquez-Boland, J.
A;Title: Comparative genomics of Listeria species.
A;Reference number: ABI077; MUID:21537279; PMID:11679669
A;Accession: AC1583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                          A; Gene:
                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Residues: 1-1237 <GLA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C; Species:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                 A;Cross-references: GB:AL592022; PIDN:CAC96435.1; A;Experimental source: strain Clip11262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          D.; Jones, L.M.; Karst,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R;Glaser, P.; Frangeul, L.; .; Dominguez-Bernal, G.; Duc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C; Accession: AC1583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C; Date: 27-Nov-2001 #sequence_revision
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Title: Transcript and sequence analysis of a 5.1 kb contiguous A;Reference number: S28718; MUID:90254839; PMID:2340592 A;Accession: S28718
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Cross-references: EMBL:U00796; NID:g2702254; PID:g2702257; A;Experimental source: plasmid Ddp5 R;Gurniak, C.B.; Bang, A.G.; Noegel, A.A. Curr. Genet. 17, 321-325, 1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Reference number: Z14684; MUID:98198836; PMID:9539429
A;Accession: T18282
A;Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                               A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: EMBL:X53237; NID:g7280; PIDN:CAA37327.1; A;Experimental source: plasmid Ddp1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Molecule type: DN
A; Residues: 37-254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Residues: 1-254 < RIE>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 internalin protein (LPXTG motif) homolog linl204 [imported] – Listeria innocua
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Genome: plasmid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
                                                                                                                                                                                                                               Query Match
Best Local :
                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         d-5
                                                                                                                                                                                                                                                                                          lin1204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      155
  127
                                        848 MPSNAQGEFSLEEQTVTYIYSKNPVPAKDITVQYTDEDGMELAPTETLS-GNVDENYVT-
                                                                                                                           788 IKATPKEVIVYIDAVQGANITVKYEDESGNKLAENSILTGNVGEEYSSSAKEILGYTLTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Listeria
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26 ENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKSIQAEFLFMNNADTNMQFATEKVT
                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                 LKADVENVYYMVKA-----TYKNDPVWGNDFTCVGVMANDVNEDEKSIQAEFL--FMNN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCDVIYVPGTDGNEEGYELWTTDYDNIP 145
                                                                              ADTIMQ--FATEKVTAVKMYGYN----RENAFRYETEDGQVFTDVIAYSDDNCDVIYVPG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ANCLNKFNEYAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ENVYHITNITQEK - - - - SNRFTCTDPLCHYCKNE:
                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      <GUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                innocua
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               G.; Duchaud,
                                                                                                                                                                                                                               9.1%;
27.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Buchrieser, C.; Amend, A.; chaud, E.; Durand, L.; Duss
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KYGASDSEFLS
                                                                                                                                                                                                            18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ;. Score 86.5; D
; pred. No. 2.3;
12; Mismatches
                                                                                                                                                                                                                               Score 85.5;
Pred. No. 21;
                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          27-Nov-2001 #text_change 27-Nov-2001
                                                                                                                                                                                                                                                  BB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DΒ
                                                                                                                                                                                                                                                2
                                                                                                                                                                                                          70;
                                                                                                                                                                                                                                                                                                                                                    PID:g16413678;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Dussurget,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Baquero, F
surget, O.;
                                                                                                                                                                                                                                                  Length 1237;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PID: 97281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PIDN: AAC18633.1
                                                                                                                                                                                                          21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             F.; Berche, P.; Entian, K.D.;
                                                                                                                                                                                                                                                                                                                                                      GSPDB: GN00178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .
A E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  fragment
```

Gaps

198

85

235

of

Dictyost

Gaps

126 847 72 Maitournam, A.; Voss, H.; Wehla

۳ :.

; Bloec Fsihi,

(strai

```
R;Pltt, G.S.; Milona, N.; Borleis, J.; Lin, K.C.; Reed, R.R.; Devreotes, Cell 69, 305-315, 1992
A;Title: Structurally distinct and stage-specific adenylyl cyclase genes A;Reference number: A42239; MUID:92233467; PMID:1348970
A;Accession: A42239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Molecule type: DNA
A; Residues: 1-1612 <GLA>
A; Cross-references: GB: NC_003210; PIDN: CAD00256.1; PID: g16411648; GSPDB: GN00177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Science 294, 849-852, 2001
A; Authors: Kreft, J.; Kuhn, M.; Kunst, F.; Kurapkat, G.; Madueno, E.; Ack, C.; Schlueter, T.; Simoes, N.; Tierrez, A.; Vazquez-Boland, J.A.; A;Title: Comparative genomics of Listeria species.
A;Reference number: AB1077; MUID:21537279; PMID:11679669
A;Accession: AB1347
                ş
                                                   밁
                                                                              Ş
                                                                                                                                                                                           C; Superfamily: sl
C; Keywords: phosp
F; 351-574/Domain:
                                                                                                                                                                                                           A;Cross-references: GB:M87278
C;Superfamily: slime mold germination stage adenylate
C;Keywords: phosphorus-oxygen lyase
                                                                                                                                                                                                                                                                                                                                                                                                     adenylate cyclase (EC 4.6.1.1) germination stage - slime mold (Dictyostelium C;Species: Dictyostelium discoideum C;Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 10-Sep-1999 C;Accession: A42239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    무
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    probable peptidoglycan bound protein (LPXTG motif) lmo2178 [imported] - Listeria
C;Species: Listeria monocytogenes
C;Date: 27-Nov-2001 #sequence_revision 27-Nov-2001 #text_change 27-Nov-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT
AB1347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                               A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     C;Accession: AB1347
R;Glaser, P.; Frang
                                                                                                                                                                                                                                                                  A; Residues: 1-858 <PIT>
                                                                                                                                                                                                                                                                                                A; Status: preliminary; nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local :
                                                                                                                                         Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Dominguez-Bernal, G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Jones, L.M.; Karst,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1mo2178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   P.; Frangeul, L.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 906
                  54
                                                     4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                         Similarity
                  NDVNEDEKSIQAEFLF - - - MNNADINM - - -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -SIQAEFL-----FMNNADTNMQFATEKVTA----VKMYGYNRENAFRYETEDGQVF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DWTTSAISANGNENLTYKNTNTNAYEITYSTKITDESDRKIKNEIT----DENGVSADAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DWADEA - - ANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TAKTFTGYELIET - - -
                                                     YSEEENSNIQMDLERSSKQIIHNIQMNAMYLLSSIDTLKALYYVNPNFDRNDFNVF----
                                                                                  WADEAANGAHQDAWKSLKADVENV-----YYM-----VKATYKNDPVWG-NDFTCVGVMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    T-VRAYTONINSVLLTEGKD-----YTIDKDVTPAGFYIQLIGDYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TDVIAYSDDNCDVIYVPGTDGNEEGYELWTTDYDNIPAN-CLNKFNEYA 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                           guanylate cyclase catalytic domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Duchaud,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9.1%;
                                                                                                                                       9.0%; Score 84.5;
23.2%; Pred. No. 16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Buchrieser, C.; Amend, chaud, E.; Durand, L.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PSNAEGKESENA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 85.5;
Pred. No. 29;
                                                                                                                                                                                                                                                                                                sequence not shown; not compared
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -MTWKITANSDRIKMGNLNITDEFSTGVKALKSY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 . 930
-QFATEKVTAVKMYGYNRE-NAFRYETEDG
                                                                                                                                                          DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  , A.; Baquero,
Dussurget, O.;
                                                                                                                         61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2
                                                                                                                                                                                                                                                                                                                                                                                                                                                            slime mold (Dictyostelium discoideum
                                                                                                                                                                                           homology
                                                                                                                                                          Length 858;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1612;
                                                                                                                                                                                                                              cyclase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 , F.; Berch
                                                                                                                                                                                                                              guanylate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              35;
                                                                                                                         37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Berche,
                                                                                                                                                                                                                                                                                                  with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Maitournam,
Voss, H.; W
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  he, P.;
K.D.; 1
                                                                                                                                                                                                                                                                                                                                                   play
                                                                                                                                                                                                                                cyclase
                                                                                                                                                                                                                                                                                                  conceptual
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                  105
                                                       98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                       different
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; Bloecker
Fsihi, H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               m, A.; Ma
Wehland,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            monocy
                                                                                                                                                                                                                                cataly
                                                   cspC protein - Clostridium acetobutylicum (fragment)
C;Species: Clostridium acetobutylicum
C;Date: 13-Jan-1996 #sequence_revision 19-Apr-1996 #
                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
R; Sanchez-Beato, submitted to the
                                    C; Accession: S57962
                                                                                                                                                                            밁
                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Gene: GDB: FBN2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Cross-references: EMBL: X62009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Accession: S31101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            R; Milewicz, D.M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: mRNA
A; Residues: 1-2918 <Z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     C; Species:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     fibrillin-2 precursor -
                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Genetics:
                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                    1409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Homo sapiens (man)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99
                                                                                                                                                                                                                                                                                 64
                                                                                                                                                                                                                                                                                                                                                                                          49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1-2918 <ZHA>
                                                                                                                                                                                                               DV--IYVPGTDGN----
                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                  Garcia,
Data
Library,
```

```
A;Cross-references: GB:U03272

R;Lee, B.; Godfrey, M.; Vitale, E.; Hori, H.; Mattei, M.(
Nature 352, 330-334, 1991

A;Title: Linkage of Marfan syndrome and a phenotypically
A;Reference number: S17062; MUID:91304567; PMID:1852206
A;Accession: S17063
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Map position: 5q23-5q31
C; Superfamily: fibrillin 1; EGF homology
C; Keywords: extracellular protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Title: Structure and expression of fibrillin-2, a novel microfibrillar component pr A;Reference number: A54105; MUID:94165150; PMID:8120105 A;Accession: A54105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 C;Date: 09-Sep-1994 #sequence_revision 09-Sep-1994 #text_change 02-Aug-2002 C;Accession: A54105; S17063; S31101 C;Accession: H; Apfelroth, S. D.; Hu, W.; Davis, E.C.; Sanguineti, C.; Bonadio, J. Cell Biol. 124, 855-863, 1994
                                                                                                                                                                                                                                                                                                                                                                                                                                            F;1-29/Domain: signal sequence #status predicted F;30-2918/product: fibrillin-2 #status predicted F;1245-1280/Domain: EGF homology <EGF1>F;1970-2013/Domain: EGF homology <EGF>.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Cross-references: GDB:128122; OMIM:121050
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: mRNA
A; Residues: 752-1407, 'R',1409-1489,1791, 'GS',1794-1796, 'QLI',1922-1923, 'LD',1926, 'P'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          submitted to the EMBL Data Library, A; Reference number: S31101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Molecule type: mRNA
A;Residues: 752-1489,1791,'GS',1794-1796,'QLI',1922-1923,'LD',1926,'P',1928
A;Cross-references: EMBL:X62009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Status: preliminary; nucleic acid
                                                                                                                                                                                                                       DECSNGTHQ---CSINAQCVN----TPGSYRCACSEGFTGDGFTC-----SDVDECAENI 1456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QVFTDVIAYSDDNCDVIYVPGTDGNEEGYELWTTDYDN--IPANCLNK
SFONICVSGTCNNLPGMFHCICDDGYELDRTGGNCTDIDECADPINCVN
                                                                                                                                                                QAEFLEMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVET---DVIAYSD-DNC 119
                                                                                                                                                                                                                                                                               DEAANGAHQDAWKSLKADVENVYYMVKATYK---NDPVWGNDFTCVGVMANDVNEDEKSI 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    --LNTTLKNSEFQYLFWIKKINNNDRNCFEEKFSKEIKDTFQIYSFDENTNSIHVAKNKS
                                                                                                                                                                                                                                                                                                                                                          8.9%;
                                                                                                                                                                                                                                                                                                                                   16;
                                                 ----EEGYEL-----WTTDYDNI--PANCLN 150
                                                                                                                                                                                                                                                                                                                                                          Score 83.5;
Pred. No. 95;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       December 1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sequence not
                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -GLDINSTDYMNETIKKSIFNK 194
                                                                                                           -LNVPGAYRCECEMG - - FTPASDSRSCQDIDEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mattel, M.G.;
                                                                                                                                                                                                                                                                                                                                                                                          BG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        shown;
                                                                                                                                                                                                                                                                                                                                   45;
                                                                                                                                                                                                                                                                                                                                                                                        ν,
                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        not compared
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    related disorder
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sarfarazi,
  1543
                                                                                                                                                                                                                                                                                                                                59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        with
                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ő
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        conceptual
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Tsipouras,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mecha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       diff
```

July

19-Apr-1996 #text_change

23-Mar-2001

```
Q
                                                             망
                                                                                        Ş
                                                                                                                        밁
   밁
                                                                                                                                                   Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 10
S20907
endo-1,4-beta-xylanase (EC 3.2.1.8) precursor,
N;Contains: endo-1,4-beta-xylanase (EC 3.2.1.8)
C;Species: Ruminococcus flavefaciens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    C; Date: 22-Nc
C; Accession:
                                                                                                                                                                                                                                                             F;623-954/Domain: catalytic domain C *status predicted <CDC>
                                                                                                                                                                                                                                                                                            F;249-622/Domain: linker region B
                                                                                                                                                                                                                                                                                                         F;1-27/Domain: signal sequence #status predicted <SIG>F;28-954/Product: bifunctional endo-1,4-beta-xylanase #status F;28-248/Domain: catalytic domain A #status predicted <CDA>F;00-256/Domain: endo-1,4-beta-xylanase homology <XYL>F;00-256/Domain: endo-1,4-beta-xylanase homology <XYL>
                                                                                                                                                                                                                                                                                                                                                                                                      A; Description: ca
A; Pathway: xylan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Reference number: S20907; MUID:92261318; A; Accession: S20907
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Title: A bifunctional xylanase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R; Zhang, J.X.; Flint, H.J. Mol. Microbiol. 6, 1013-1023, 1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Cross-references: EMBL:250033; N
C;Superfamily: cpl repeat homology
F;533-552/Domain: cpl repeat homol
F;553-572/Domain: cpl repeat homol
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Description: Molec
A; Reference number:
A; Accession: S57962
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Residues:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Start codon:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                         Superfamily: Ruminococcus bifunctional endo-1,4-beta-xylanase; Keywords: extracellular protein; glycosidase; hydrolase; multi
                                                                                                                                                                                                                                                                                                                                                                                                                                      ; Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Genetics:
                                                                                                                                                                                       Matches
                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                     ocal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 22-Nov-1993 #sequence_revision 22-Nov-1996 #text_change
   812
                                                                                                                          722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               379
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         324
                                                                                           57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        57
                                                                                                                                                                                     L Similarity
43; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1-954 <ZHA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1-601 <SAN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S20907; S18043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                            SDDNCDVIYVPGTDGNEEGYELWTTDYDNIPANC---LNKFNEYAVGRETRDVFTSA 168
                                                                                        NEDEKSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNR--ENAFRYETEDGQVFTDVIAY
                                                                                                                        PDWFFRENFSQNGAYVSKDIMNQRLESMIKNTFAALKSQYPNLDVYSYD-VC
                                                                                                                                                     PDW---ADEAANGAH--QDAW-KSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDV 56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EDGQVFTDVIAYSDDNCDV-----IYVPGTDGNEEGYELWTTD-----YDN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEDGKNLDAKDLFLNTDGTINEDTKFTVANGKLIA----YNTEMNEYKKVVVRAYSLKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KGGYYYADEEDESKEDCEVSSQDDKTSAVQTDVDGN-----LWRLDGGYIYKFDN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NEDEKSIQAEFLEMN-----NADTNMQFATEKVTAVKMYGYNRE----
                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTG
                                                                                                                                                                                                                                                                                                                                                                                                                   catalyzes the hydrolysis of 1,4-beta-xylosidic bonds in xylans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 source:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Molecular c
                                                                                                                                                                                                                                                                                                                                                                                                      degradation
                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             cpl repeat homology
cpl repeat homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL:Z11127;
ce: strain 17
                                                             -LFLNNGG-GMRGA-DNSNWVKIYGDDSFVINAFKYARQ-----
                                                                                                                                                                                                    8.8%;
24.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      characterization
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8.9%;
                                                                                                                                                                                                                                                #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   encoded by the xynA gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NID: g899232;
                                                                                                                                                                                                  Pred.
                                                                                                                                                                                                                  Score 82.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NID: g46161;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 83;
Pred. No.
                                                                                                                                                                                                                                                                                             #status predicted <LRB>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             <CP3>
                                                                                                                                                                                                    No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PMID: 158402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB . 14;
                                                                                                                                                                                                    28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PIDN:CAA77476.1; PID:g581505
                                                                                                                                                                                                          DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PIDN:CAA90347.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               bifunctional
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  family of choline-binding
                                                                                                                                                                                                                                                                                                                                                                       hydrolase; multifunctional enzyme;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2:
                                                                                                                                                                                     37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 601
                                                                                                                                                                                                                Length
                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        of.
-IPAKTNDIYNMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       the
                                                                                                                                                                                                                                                                                                                                         predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ruminococcus
                                                                                                                                                                                71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PID: 9899233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    18-Jun-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ---NAFRYET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   38;
                                                                                                                                                                                                                                                                                                                                                                                      endo-1,4-beta-xylanase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       rumen
                                                                                                                                                                                                                                                               <XXY>
                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cellulolytic
838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  proteins
                                                                                        114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        378
                                                                                                                        772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 flavefaciens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of.
                                                                                                                                                                                                                                                                                                                                                                       poly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       bact
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Cld
                                           멍
                                                                     δÃ
                                                                                                      밁
                                                                                                                                  Q
            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                               A; Gene: MYB14
                                                                                                                                                                                                                                                                                                                                                                       A; Reference number: A; Accession: T51637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             T51637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Molecule type: DNA
A; Residues: 1-1129 < KON>
                                                                                                                                                                                                                                                                                                                          A;Molecule type: mRNA
A;Residues: 1-166 <KR
                                                                                                                                                                                                                                                                                                                                                       A;Status: preliminary; translated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Introns: 30/3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Gene: DmRP135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C;Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Note:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Accession:
                                                                                                                                                                                                                               ;Keywords:
                                                                                                                                                                                Query Match
Best Local
                                                                                                                                                                                                                                             Superfamily: Arabidopsis
                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     the authors
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    158
                                                                                                                                      18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 11
                                                                                                                                                                                                                                                                                                                          1-166 <KRA>
                                                                                                                                                                                                                             transcription
                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JQ0354
                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL:X17298;
translated th
                                                                                                                                                                                8.5%;
                                                                                                                                                                                                                                factor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8.7%;
25.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      the
```

```
C;Superfamily: DNA-directed RNA polymerase 132K polypeptide
C;Keywords: DNA binding; nucleotidyltransferase; nucleus; transcription;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      R;Kontermann, R.; Sitzler, S.; Selfarth, W.; Petersen, G.; Bautz, E.K.F. Mol. Gen. Genet. 219, 373-380, 1989
A;Title: Primary structure and functional aspects of the gene coding for A;Reference number: JQ0354; MUID:90158499; PMID:2482932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DNA-directed RNA polymerase (EC 2.7.7.6) I second largest chain - fruit fly C; Species: Drosophila melanogaster
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C;Date: 07-Sep-1990 #sequence_revision 07-Sep-1990
C;Accession: JQ0354; S07025
                                                                                                                                     NGAHQDAWKSLKA--DVENVYYMVKATYKNDPV-----W---GNDFTCVGVMANDVNED 59
ESSLSNVVHYLNNGTAKFMFSHVK
                                           EKSIQAEFLFMNNADTNMQFATEK
                                                                                                                                                                                                                                                                                                                                                  FlyBase:FBgn0003278
                                                                                                                                                                                    15;
                                                                                                                                                                                    Score 81.5; D. Pred. No. 42; 15; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                      NID:g8473; I
ne codon CAG
                                           83
                                                                                                                                                                                                                                                                                                                                                                                                                      PIDN:CAA35185.1;
G for residue 202
                                                                                                                                                                                                                                  DВ
                                                                                                                                                                                    37;
                                                                                                                                                                                                                                2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    #text_change 21-Jul-2000
                                                                                                                                                                                                                                  Length 1129;
                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                      PID:g8474
as Glu, TCT
                                                                                                                                                                                    11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               for
                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                zinc finger
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               the
                                                                                                                                                                                                                                                                                                                                                                                                                         for
                                                                                            217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (Drosophi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               second-1
```

myb-related transcription factor MYB14 [imported] - Arabidopsis thaliana (fragment) (Species: Arabidopsis thaliana (mouse-ear cress) C:Date: 18-Aug-2000 #sequence_revision 18-Aug-2000 #text_change 17-Nov-2000 C:Accession: T51637 R;Kranz, H.D.; Denekamp, M.; Greco, R.; Jin, H.; Kra Paz-Ares, J.; Weisshaar, B. Plant J. 16, 263-276, 1998 A;Title: Towards functional characterisation of the A;Reference number: Z14349; MUID:9839469; PMID:98394 A;Cross-references: EMBL:AF062865; PIDN:AAC83587.1 A;Experimental source: cultivar Columbia ----TASLQQFSNSITTEDISNDNKDDIMSYE---WKSLKA------DVENVYYM-VKATYKNDPVWGNDFTCVGVMANDVNEDEKSIQAEFL FMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDN--CDVIYVPG WSAIAAKLPGRTDNEIKNVWHTHLKKRLSKNLNNGGDTKDVNGINETTNEDKGSVIVD--28K leaf-specific myb-related protein; 27; Score 80; Pred. No. from Mismatches GB/EMBL/DDBJ LNKFNEYAVGRETRDVFTS DВ 2 Kranz, 65; members Length 166 -DISALIDDSFWSDVISVDN Indels H.D.; Denekamp, of the R2R3-MYB gene 167 38; myb Gaps DNA-binding 3 126 63 8 Greco,

rep

from

₽.

```
S
                                                          밁
                                                                                                              Š
                                                                                                                                                                                                                                                                                                                  A;Gene: alr2832
C;Superfamily: 1
                                                                                                                                                                                                                                                                                                                                                                                                   A;Residues: 1-362 <KUR>
A;Cross-references: GB:BA000019; PIDN:BAB74531.1; PID:g17131926; GSPDB:GN00179
A;Experimental source: strain PCC 7120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Nakazaki, N.; Shimpo, S.; Sugimoto, M.; Takazawa, M.; Yamada, M.; Yasuda, M.; Tabata, 9. DNA Res. 8, 205-213, 2001
A;Tille: Complete Genomic Sequence of the Filamentous Nitrogen-fixing Cyanobacterium Ana;Reference number: AB1807; MUID:21595285; PMID:11759840
A;Accession: AI2159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C;ACCESSION: AI2159
R;Kaneko, T.; Nakamura, Y.; Wolk, C.P.; Kuritz, T.; Sasamoto, S.; Watanabe, A.; Iriguch
Nakazaki, N.; Shimpo, S.; Sugimoto, M.; Takazawa, M.; Yamada, M.; Yasuda, M.; Tabata,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                hypothetical protein air2832 [imported] - Nostoc sp. (strain PCC 7120)
C;Species: Nostoc sp. PCC 7120
A;Note: Nostoc sp. strain PCC 7120 is a synonym of Anabaena sp. strain PCC 7120
C;Date: 14-Dec-2001 #sequence_revision 14-Dec-2001 #text_change 09-Dec-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Map position: 2
C;Superfamily: Arabidopsis 28K leaf-specific myb-related protein; myb DNA-binding repeat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Title: Sequence and analysis of chromosome 2 of the plant Arabidopsis thaliana. A;Reference number: A84420; MUID:20083487; PMID:10617197 A;Accession: E84717
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         R:Lin, X.; Kaul, S.; Rounsley, S.D.; Shea, T.P.; Benito, M.I.; Town, C.D.; Fujii, C.Y. M.; Koo, H.; Moffat, K.S.; Cronin, L.A.; Shen, M.; VanAken, S.E.; Umayam, L.; Tallon, euss, D.; Nierman, M.C.; White, O.; Elsen, J.A.; Salzberg, S.L.; Fraser, C.M.; Venter, Nature 402, 761-768, 1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           probable MYB family transcription factor [imported] - Arabidopsis thaliana
C;Species: Arabidopsis thaliana (mouse-ear cress)
C;Date: 02-Feb-2001 #sequence_revision 02-Feb-2001 #text_change 17-May-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Gene: At2g31180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: DNA
A; Residues: 1-249 <STO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Cross-references: GB:AE002093; NID:g4432813; PIDN:AAD20663.1; GSPDB:GN00139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Status: preliminary
                                                                                                                                                                                      Query Match
Best Local S
Matches 42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match 8.5%; Score 80; DB 2; Length 249; Best Local Similarity 22.6%; Pred. No. 8.4; Matches 38; Conservative 27; Mismatches 65; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Accession:
                                                                                                                                                                                                                                                                                                           Superfamily: hypothetical protein sll1534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            111
                                                             192 SDTKDEYYLASARMISYKRLDIIVEAFNWLGWPLIISGDGPERER-LQAKALDNIKFLGH 250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 69 FMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDN--CDVIYVPG 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               89 WSAIAAKLPGRTDNEIKNVWHTHLKKRLSKNLNNGGDTKDVNGINETTNEDKGSVIVD-- 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      18 WKSLKA------DVENVYYM-VKATYKNDPVWGNDFTCVGVMANDVNEDEKSIQAEFL 68
73
                                                                                                                           23
                                                                                                                                                                                   ch 8.5%; Score 79.5; I
Similarity 23.6%; Pred. No. 15;
42; Conservative 26; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SNKNEKKIEDWEGLIDRNSKKCSYSNSKLYNDDMEFWF-----DVFTS 236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TDGNEEGYELWTTDYDNIPANC-----LNKFNEYAVGRETRDVFTS 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----TASLQQFSNSITTFDISNDNKDDIMSYE------DISALIDDSFWSDVISVDN 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SNKNEKKIEDWEGLIDRNSKKCSYSNSKLYNDDMEFWF-----DVFTS 153
ADTING---FATEK---VTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCDVIYVPG
                                                                                                                        ADVENVYYMVKA---TYKNDPVWGNDFTCVG---VMANDVNEDEKSIQAEFL----FMNN
                                                                                                                                                                                                                                                 DB 2;
                                                                                                                                                                                         69;
                                                                                                                                                                                                                                             Length 362;
                                                                                                                                                                                         Indels
                                                                                                                                                                                         41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                      Gaps
                                                                                                                        72
                                                                                                                                                                                      9
```

Qy Db	Qу	Qу	Query Match Best Local Matches 4	A; Status: prelimi A; Molecule type: A; Residues: 1-137 A; Cross-reference A; Experimental so C; Genetics: A; Gene: MYPU_2120 A; Genetic code: S	R;Chambau Nucleic A A;Title: ' A;Referen	C; Species C; Date: 2 C; Accessi	RESULT 15 D90538 hypothetic	Db	Qy	Db
116 DDNCDVIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVF 165 : : : : : : :	56 VNEDEKSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYS 115	15 QDAWKSLKADVENVYYMYKATYKNDPVWGNDFTCVGVMAN-D 55	Query Match 8.5%; Score 79.5; DB 2; Length 1377; Best Local Similarity 24.7%; Pred. No. 83; Matches 42; Conservative 27; Mismatches 50; Indels 51; Gaps 11;	A;Status: preliminary A;Status: preliminary A;Molecule type: DNA A;Residues: 1-1377 <kur> A;Cross-references: GB:AL445566; PID:g14089625; PIDN:CAC13385.1; GSPDB:GN00153 A;Experimental source: strain UAB CTIP C;Genetics: A;Gene: MYPU_2120 A;Gene: MYPU_2120 A;Genetic code: SGC3</kur>	K;Chambaud, 1.; Hellig, K.; Ferris, S.; Barbe, V.; Samson, D.; Galisson, F.; Moszer, Nucleic Acids Res. 29, 2145-2153, 2001. A;Title: The complete genome sequence of the murine respiratory pathogen Mycoplasma pa;Reference number: A99512; MUID:21267165; PMID:11353084 A:Accession: D90538	C;Species: Mycopiasma pulmonis C;Date: 24-May-2001 #sequence_revision 24-May-2001 #text_change 03-Aug-2001 C;Accession: D90538	RESULT 15 D90538 hypothetical protein MYPU_2120 [imported] - Mycoplasma pulmonis (strain UAB CTIP)	304 QTGVFFKRQTPESLQKALLESGEITWDYENIRNHAVNNESEPVFESKVERVITQTC 359	127 TDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSAC 169	251 VSDNQRKELFSKAKSIIVAALEDYGLVPVEANASGTPVIAFGAGGVLDTQING 303

Search completed: August 1, 2003, 12:16:34
Job time: 14.7029 secs

THIS PAGE BLANK (USPTO)

3

```
Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Minimum DB seq
Maximum DB seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                            Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
      80
80
79
79
78.5
78.5
76.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                            Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-087-195-7
936
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                451899 seqs, 118759770 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        August 1, 2003, 12:15:58; Search time 16.9371 Seconds
        100.0
67.3
35.4
8.5
8.5
8.2
8.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Published_Applications_AA:*

| (gn2_6/ptcdata/1/pubpaa/US07_PUBCOMB.pep:*
| (gn2_6/ptcdata/1/pubpaa/PCT_NEW_PUB.pep:*
| (gn2_6/ptcdata/1/pubpaa/US06_NEW_PUB.pep:*
| (gn2_6/ptcdata/1/pubpaa/US06_PUBCOMB.pep:*
| (gn2_6/ptcdata/1/pubpaa/US06_PUBCOMB.pep:*
| (gn2_6/ptcdata/1/pubpaa/US06_PUBCOMB.pep:*
| (gn2_6/ptcdata/1/pubpaa/PCTUS_PUBCOMB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       : /cgn2_6/ptodata/1/pubpaa/USO9A_PUBCOMB.pep:*
): /cgn2_6/ptodata/1/pubpaa/USO9B_PUBCOMB.pep:*
): /cgn2_6/ptodata/1/pubpaa/USO9B_PUBCOMB.pep:*
): /cgn2_6/ptodata/1/pubpaa/USO9_NEW_PUB.pep:*

2: /cgn2_6/ptodata/1/pubpaa/USI0A_PUBCOMB.pep:*

3: /cgn2_6/ptodata/1/pubpaa/USI0B_PUBCOMB.pep:*

4: /cgn2_6/ptodata/1/pubpaa/USI0C_PUBCOMB.pep:*

5: /cgn2_6/ptodata/1/pubpaa/USI0C_PUBCOMB.pep:*

5: /cgn2_6/ptodata/1/pubpaa/USI0_NEW_PUB.pep:*

7: /cgn2_6/ptodata/1/pubpaa/USG0_PUBCOMB.pep:*

7: /cgn2_6/ptodata/1/pubpaa/USG0_PUBCOMB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NQPDWADEAANGAHQDAWKS.....FNEYAVGRETRDVFTSACLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /cgn2_6/ptodata/1/pubpaa/US08_NEW_PUB.pep:*
/cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep:*
                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                              DΒ
        9 15 15 15 15
  14 US-10-085-572-7
14 US-10-087-195-7
14 US-10-085-572-6
14 US-10-085-572-8
15 US-10-087-195-8
16 US-10-087-195-8
17 US-10-278-173-22
18 US-10-278-173-22
18 US-09-738-656-514
18 US-09-815-242-12586
18 US-09-815-242-175
18 US-09-815-242-1751
18 US-09-815-242-1751
                                                                                                                                                                                                                                                                                                                              ᅜ
                                                                                                                                                                                                                                                                                                                                                                                        SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (without alignments)
1199.017 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             451899
Sequence 7, Appli
Sequence 6, Appli
Sequence 6, Appli
Sequence 8, Appli
Sequence 8, Appli
Sequence 4, Appli
Sequence 5144, Appli
Sequence 5144, Appli
Sequence 5484, Appli
Sequence 17, Appli
Sequence 5779, Appli
Sequence 17751, Appli
                                                                                                                                                                                                                                                                                                                         Description
```

71.5 71.5 71.5 71.5 71.5 71.5 71.5 71.5	75 75 75 72.5 72.5 72.5 72.5 72.5
	777777888 77777779000
603 604 650 743 743 743 743 743 743 743 743 743 743	1806 695 602 661 661 932
110511111111111111111111111111111111111	15 15 11 11 11 11
US-09-893-525-42 US-09-893-525-42 US-09-893-525-42 US-09-893-525-42 US-09-893-525-42 US-09-818-276-12 US-10-112-488-42 US-09-912-020-364 US-10-12-488-42 US-09-912-020-364 US-09-988-200-4 US-09-988-200-4 US-09-808-602-80 US-09-808-602-81 US-09-808-602-81 US-09-808-602-81 US-09-808-602-81 US-09-808-602-81 US-09-808-602-81 US-09-808-602-81	US-10-128-714-3284 US-10-128-714-8284 US-10-156-761-13509 US-09-784-5548-6 US-10-195-158-5 US-10-195-158-5 US-09-988-636-240 US-09-988-636-240 US-09-9815-242-5578
Sequence 105, Appl Sequence 40, Appl Sequence 42, Appl Sequence 405, Appl Sequence 405, Appl Sequence 4, Appl Sequence 60, Appl Sequence 60, Appl Sequence 80, Appl Sequence 80, Appl Sequence 80, Appl Sequence 80, Appl Sequence 81, Appl Sequence 81, Appl Sequence 81, Appl Sequence 72, Appl Sequence 716, Appl Sequence 72, Appl Sequence 73, Appl Sequence 81, Appl Sequence 81, Appl Sequence 81, Appl Sequence 69, Appl	

ALIGNMENTS

RESULT 1 US-10-085-572-7

; SEQ ID NO 7; LENGTH: 171; TYPE: PRT; ORGANISM: FS-HBP; US-10-085-572-7. δÃ APPLICANT: Nuttall, Patricia, Ann
APPLICANT: Nessen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Conjunctivitis
FILE REFERENCE: 2488-1-003
CURRENT APPLICATION NUMBER: US/10/085,572
CURRENT FILING DATE: 2002-02-7
PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR FILING DATE: 2000-08-24
PRIOR FILING DATE: 1999-09-01
NUMBER: OF SEQ ID NOS: 8 Š 밁 밁 Š Query Match Best Local S Matches 171 Sequence 7, Application US/10085572 Publication No. US20020151499A1 GENERAL INFORMATION: SOFTWARE: FastSEQ for Windows Version 4.0 121 VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE 61 61 h 100.0%; Score 936; DB 14; Similarity 100.0%; Pred. No. 1.1e-92; 71; Conservative 0; Mismatches 0; KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD NQPDWADEAANGAHQDAWKSLKADVENYYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE Indels Length 171; 0 171

Gaps

US-10-087-195-7

Sequence 7, Application US/10087195 Publication No. US20020193306A1 GENERAL INFORMATION:

```
밁
                                    Q
                                                                                                                                                            ORGANISM: FS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-085-572-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; TYPE: PRT; ORGANISM: FS-HBP 2
US-10-087-195-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 6, Application US/10085572 Publication No. US20020151499A1 GENERAL INFORMATION:
                                                                                 Matches
                                                                                                   Query Match
Best Local
                                                                                                                                                                                                                                         SEQ ID NO 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches 171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                       PRIOR APPLICATION NUMBER: 9920674.0 PRIOR FILING DATE: 1999-09-01 NUMBER OF SEQ ID NOS: 8
                                                                                                                                                                                                                                                                                                                                    CURRENT APPLICATION NUMBER: US/10/085,572
CURRENT FILING DATE: 2002-02-27
PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR FILING DATE: 2000-08-24
                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Nuttall, Patricia, Ann
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Conjunctivitis
EILE REFERENCE: 2488-1-003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CURRENT APPLICATION NUMBER: US/10/087,195
CURRENT FILING DATE: 2002-03-01
PRIOR APPLICATION NUMBER: PCT/GB00/03287
PRIOR FILING DATE: 2000-08-24
PRIOR FPLICATION NUMBER: 9920673.2
PRIOR FILING DATE: 1999-09-01
NUMBER OF SEQ ID NOS: 8
                                                                                                                                                                                                                                                         SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Allergic Rhinitis
FILE REFERENCE: 2488-1-004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Nuttall, Patricia, Anne APPLICANT: Paesen, Guido, Christia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                  TYPE: PRT
                                                                                                                                                                                                                    ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121 VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61 KSIQAEFLEMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD 120
                                                                                                                                                                                                                    172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE
                                                                                                 Similarity
                  NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE 60
DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                               Conservative
                                                                                               67.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100.0%; Score 936; DB 14; 100.0%; Pred. No. 1.1e-92;
                                                                             20;
                                                                        Score 630; DB 14,
Pred. No. 7.4e-60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0,:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0
                                                                                                               Length 172;
                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60
```

Query Match

35.48;

Score 331.5;

DB 14;

```
; ORGANISM: MS-HBP
US-10-085-572-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-085-572-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; ORGANISM: FS-HBP1
US-10-087-195-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ϋ́
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-087-195-6
                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
                                                                                          SEQ ID NO 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 6, Application US/10087195 Publication No. US20020193306A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 8, Application US/10085572 Publication No. US20020151499A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                      CURRENT FILING DATE: 2002-02-27
PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR FILING DATE: 2000-08-24
                                                                                                                                                                                                                                                       APPLICANT: Nuttall, Patricia, Ann APPLICANT: Paesen, Guido, Christiaan TITLE OF INVENTION: Treatment of Conjunctivitis FILE REFERENCE: 2488-1-003
CURRENT APPLICATION NUMBER: US/10/085,572
CURRENT FILING DATE: 2002-02-27
                                                                                                                                                            PRIOR APPLICATION NUMBER: 9920674.0 PRIOR FILING DATE: 1999-09-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION NUMBER: US/10/087,195
CURRENT FILING DATE: 2002-03-01
PRIOR APPLICATION NUMBER: PCT/GB00/03287
                                                                                                              SOFTWARE: FastSEQ
                                                                                                                                    NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR APPLICATION NUMBER: PRIOR FILING DATE: 1999-09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Nuttall, Patricia, Anne
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Allergic Rhinitis
FILE REFERENCE: 2488-1-004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR FILING DATE: 2000-08-24
                                            TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: PRT
                                                                  LENGTH: 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121 VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    al Similarity
113; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121 VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 KSIQAEFLEMNNADINMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 KSIQAEFLEMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVWANDVNEDE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                for Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1999-09-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  67.3%; Score 630; DB 14; 66.5%; Pred. No. 7.4e-60; rative 20; Mismatches 37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9920673.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 172;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
```

5

207

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                          á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; LENGTH: 182
; TYPE: PRT
; ORGANISM: MS-HBP 1
US-10-087-195-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                           US-09-728-914-4
                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                               Sequence 4, Application US/09728914 Patent No. US20010046499A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQ ID NO 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 8, Application US/10087195 Publication No. US20020193306A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity 42.0%;
Matches 74; Conservative 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                             APPLICANT: DAS, SÚBRATA
TITLE OF INVENTION: TICK ANTIGENS AND COMPOSITIONS AND METHODS COMPRISING
TITLE OF INVENTION: THEM
FILE REFERENCE: YU-107
CURRENT APPLICATION NUMBER: US/09/728,914
CURRENT FILING DATE: 2000-12-01
PRIOR APPLICATION NUMBER: 60/169,048
PRIOR ETLING DATE: 1999-12-03
                                                                                                                                                                              APPLICANT: KANTOR, FRED S. APPLICANT: FIKRIG, EROL APPLICANT: DAS, SUBRATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: PCT/GB00/03287
PRIOR FILING DATE: 2000-08-24
PRIOR APPLICATION NUMBER: 9920673.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CURRENT APPLICATION NUMBER: US/10/087,195
CURRENT FILING DATE: 2002-03-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NUMBER OF SEQ ID NOS: 8
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Nuttall, Patricia, Anne
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Allergic Rhinitis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR FILING DATE: 1999-09-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILE REFERENCE: 2488-1-004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local
APPLICATION NUMBER: 60/240,716 FILING DATE: 2000-10-16
                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120 DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC 169
                                                                                                                                                                                                                                                                                                                                                                                                                              120 DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120 DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60 LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63 IQAEFLEMNNADINMQFATEKVTAVKMYGYNRENAFRYETED -- GOVETDVIAYSD-DNC 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3 PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKS 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3 PDWADEAANGAHQDAWKSLKADVENYYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKS 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity 42.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETED--GQVFTDVIAYSD-DNC 119
                                                                                                                                                                                                                                                                                                                                                                                      DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      29; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 331.5; DB 14;
Pred. No. 8.6e-28;
29; Mismatches 62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred. No. 8.6e-28; 9; Mismatches 62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 182;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; LENGTH: 221
TYPE: PRT
; ORGANISM: Ixodes scapularis
US-09-728-914-4
                   밁
                                                     Ş
                                                                                                 밁
                                                                                                                                     Š
                                                                                                                                                                                                                                                               ; OTHER INFORMATION: G1307 US-10-278-173-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-278-173-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUMBER OF SEQ ID NOS: 39
SOFTWARE: PatentIn Ver. :
SEQ ID NO 4
                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 22
LENGTH: 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match 9.8%;
Best Local Similarity 24.2%;
Matches 32; Conservative
                                                                                                                                                                                Matches
                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 22, Application US/10278173 Publication No. US20030061637A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FILE REFERENCE: MBI-009
CURRENT APPLICATION NUMBER: US/10/278,173
CURRENT FILING DATE: 2002-10-21
PRIOR APPLICATION NUMBER: US/09/533,392
PRIOR FILING DATE: 2000-03-22
                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION NUMBER: 60/125,814 PRIOR FILING DATE: 1999-03-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Samaha, Raymond TITLE OF INVENTION: POLYNUCLEOTIDES FOR ROOT TRAIT ALTERATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Jiang, Cai-Zhong APPLICANT: Broun, Pierre
                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQ ID NOS: 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                       ORGANISM: Arabidopsis thaliana FEATURE:
                                                                                                                                                                                                     Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             148 TPIGIATDNLVLYSNYVNCTVLRIPFTNQGERHCDLWMANLTLSQETPDDCLNKFFEYCN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               208 TTQIYRVYYPSC 219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     158 GRETRDVFTSAC 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    103 EDGQVFTD-VIAYSD-DNCDVIYVPGTDGNEEGYELWTTDY---DNIPANCLNKFNEYAV 157
                 147 ----TASLQQFSNSITTFDISNDNKDDIMSYE----
                                                                                                 89
                                                                                                                                        18 WKSLKA-----DVENVYYM-VKATYKNDPVWGNDFTCVGVMANDVNEDEKSIQAEFL 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          88 DFSGNPVQCENFRVMEKRTPTNYSFQYRYKSKNSWETIDETLILKDIGEHGFPNVMNFQR 147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  45 DFTCVGVMANDVNEDEKSIQAEFLFMNNADTNMQFAT-EKVTAVKMYG-YNRENAFRYET 102
                                                         69 FMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDN--CDVIYVPG 126
                                                                                                                                                                                38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Yu, Guo-Liang
Pilgrim, Marsha
Keddie, James
                                                                                                 WSAIAAKLPGRTDNEIKNVWHTHLKKRLSKNLNNGGDTKDVNGINETTNEDKGSVIVD--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Reuber, Lynne
Ratcliffe, Oliver
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pineda, Omaira
Zhang, James
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Broun, Pierre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Adam, Luc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Heard, Jacqueline
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Riechmann, Jose-Luis
                                                                                                                                                                                Conservative
                                                                                                                                                                                                 8.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       24; Mismatches
                                                                                                                                                                            27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 91.5; DB 9;
Pred. No. 0.063;
                                                                                                                                                                                                   Score 80; DB Pred. No. 1.3;
                                                                                                                                                                                                                      DB 15; Length 249;
                                                                                                                                                                                65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           69;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 221;
                                                                                                                                                                                Indels
                   -DISALIDDSFWSDVISVDN 193
                                                                                                                                                                                38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       7;
                                                                                                                                                                              Gaps
```

```
Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                  US-09-815-242-5484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-738-626-5144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; ORGANISM: Corynebacterium glutamicum US-09-738-626-5144
                                                                                                                                                                                                                                                                                                                     Sequence 5484, Application US/09815242 Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQ ID NO 5144
LENGTH: 929
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 5144, Application US/09738626 Publication No. US20020197605A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                            APPLICANT:
                                              TITLE OF INVENTION: Identification TITLE OF INVENTION: Prokaryotes FILE REFERENCE: ELITRA.011A
                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                   ENERAL INFORMATION
                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                    APPLICANT: Haselbeck, Robert APPLICANT: Ohlsen, Kari L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION NUMBER: JP 00/280988 PRIOR FILING DATE: 2000-08-03 NUMBER OF SEQ ID NOS: 7059
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILE REFERENCE: 249-125
CURRENT APPLICATION NUMBER: US/09/738,626
CURRENT FILING DATE: 2000-12-18
                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE: PatentIn ver. 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR APPLICATION NUMBER: JP 99/377484
PRIOR FILING DATE: 1999-12-16
PRIOR APPLICATION NUMBER: JP 00/159162
PRIOR FILING DATE: 2000-04-07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: NAKAGAWA, SATOSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                          181 T 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    139 T 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              125 FALERLSHVVM----DEIHFLADASRGAVWEEVILNLDDSVNIIGLSATVSNSEEFGEWL 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     194 SNKNEKKIEDWEGLIDRNSKKCSYSNSKLYNDDMEFWF-----DVFTS 236
    APPLICATION NUMBER: US/09/815,242 FILING DATE: 2001-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      79 FATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCDVIYVPGTDGNEEGYELWT 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    73 IKALSNQKYHDLVAKHGSD------AVGLLTGDVSINHDADIVVMTTEVLRNMIYAGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            21 LKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDV--NEDEKSIQAEFLFMNNADTNMQ 78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             l Similarity
31; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TDGNEEGYELWTTDYDNIPANC-----LNKFNEYAVGRETRDVFTS 167
                                                                                                               Xu, H. Howard
                                                                                                                                                       Trawick, John D. Carr, Grant J.
                                                                                                                                                                                                      Zyskind, Judith W. Wall, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OZAKI, AKIO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               YOKOI, HARUHIKO
TATEISHI, NAOKO
SENOH, AKIHIRO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HAYASHI, MIKIRO
OCHIAI, KEIKO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MIZOGUCHI, HIROSHI
                                                                                                                                       amamoto, Robert T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEIKO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MASATO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8.5%; Score 80; DB 10; Length 929; 25.6%; Pred. No. 7.4; ative 20; Mismatches 56; Indels
                                                                                          of Essential Genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        56; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ₽.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-815-242-12586
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; ORGANISM: Staphylococcus aureus US-09-815-242-5484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: Fas
SEQ ID NO 5484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 12586, Application Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                PRIOR APPLICATION NUMBER: 60/253,625
PRIOR FILING DATE: 2000-11-27
                                                                                                                                                                                                                        PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR FILING DATE: 2000-05-26
                                                                                                                                                                                                                                                                                                                 CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: Prokaryotes
                                                                 PRIOR APPLICATION NUMBER: 60/269,308
                                                                                                           PRIOR APPLICATION NUMBER: 60/257,931
                                                                                                                                                                            PRIOR APPLICATION NUMBER: 60/242,578 PRIOR FILING DATE: 2000-10-23
                                                                                                                                                                                                                                                                                                                                                                                                            FILE REFERENCE: ELITRA.011A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
                       NUMBER OF SEQ ID NOS:
                                              PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER: 60/269,308 PRIOR FILING DATE: 2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION NUMBER: 60/
PRIOR FILING DATE: 2000-12-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR APPLICATION NUMBER: 60/253,625
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR FILING DATE: 2000-10-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR FILING DATE: 2000-05-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Haselbeck,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE: 2000-11-27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: 60/242,578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: 60/191,078 FILING DATE: 2000-03-21 APPLICATION NUMBER: 60/206,848 FILING DATE: 2000-05-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ·230 NVEVVDLRTVYPLDKETIIDRAKHTGKVLLVTEDNL-----EGSIMSEVSAIIAEHCLF 283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             173 HKKAYRFLKEEVPEEYYTVPLGKADVKRE----GEDLTVFCYGLMVNYCLQAADILAADGI 229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 284 ELDAPIMRLAAPDVPSMPFSPVLEN--EIMMN----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       14 HQDAWKSLKADVENVYYMV---KATYKNDPVWGNDFT--CVGVMANDVNEDEKSIQAEFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ch 8.4%; Score 79; DB 1 Similarity 23.1%; Pred. No. 2.4; 39; Conservative 25; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FMNNADTNMQFATEKVTAV-----KMYGYNRENAFRYETEDGQVFTDVIAYSDDNC-- 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ohlsen, Kari L.
Zyskind, Judith W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Xu, H. Howard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Carr, Grant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Wall, Daniel
Trawick, John D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Yamamoto, Robert T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Application US/09815242
                                              2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ----DVIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYA 156
Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   14110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60/257,931
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60/207,727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 9;
```

-PEKILNKMRELA 325

63;

Gaps

Length 327 Indels

```
PRIOR APPLICATION NUMBER: US/09/805,354

PRIOR APPLICATION NUMBER: US 09/758,493

PRIOR FILING DATE: 2001-01-11

PRIOR APPLICATION NUMBER: US 60/221,950

PRIOR FILING DATE: 2000-07-31

NUMBER OF SEQ ID NOS: 20

SOFTWARE: FastSEQ for Windows Version 4.0

SEQ ID NO 17

LENGTH: 201

LENGTH: 201

TYPE: DDM
                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; TYPE: PRT
; ORGANISM: Staphylococcus aureus
US-09-815-242-12586
                                                                                                                                                                 US-10-144-259-17
                                                                                                                                                                                         RESULT 13
                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-805-354-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-805-354-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION:
APPLICANT: Arnaout, M. Amin
APPLICANT: L1, Ru1
APPLICANT: L1, Ru1
APPLICANT: Xiong, Jian-Ping
TITLE OF INVENTION: HIGH AFFINITY INTEGRIN POLYPEPTIDES AND USES THEREOF
FILE REFERENCE: 00786-536001
CURRENT APPLICATION NUMBER: US/09/805,354
CURRENT FILING DATE: 2002-06-04
                                                                                              Sequence 17, Application US/10144259 Publication No. US20030109691A1. GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 12586
LENGTH: 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 17, Application US/09805354 Publication No. US20030078375A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match 8.4%; Score 79; DB 9; Length 327 Best Local Similarity 23.1%; Pred. No. 2.4; Matches 39; Conservative 25; Mismatches 63; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
APPLICANT: Arnaout, M. Amin
APPLICANT: L1, Rui
APPLICANT: Xiong, Jian-Ping
TITLE OF INVENTION: VARIANT INTEGRIN POLYPEPTIDES AND USES THEREOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Match 8.4%; Score 78.5; D. Local Similarity 23.1%; Pred. No. 1.8; Ped. 28; Conservative 20; Mismatches
                                                                                                                                                                                                                                                               181 P 181
                                                                                                                                                                                                                                                                                                        145 P 145
                                                                                                                                                                                                                                                                                                                                                         127 DSTHLLVFSTESAFHYEADGANVLAGIMSRNDERCHL----DTTGTYTQYR--TQDYPSV 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          284 ELDAPIMRLAAPDVPSMPFSPVLEN--EIMMN-----PEKILNKMRELA 325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             173 HKKAYRFLKEEVPEEYYTVPLGKADVKRE---GEDLTVFCYGLMVNYCLQAADILAADGI 229
                                                                                                                                                                                                                                                                                                                                                                                               85 TAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCDVIYVPGTDGNEEGYELWTTDYDNI 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                67 WPNSDPPFSFKNVISLTEDVDEFRNKLQGERISGNLDAPEGGFDAILQTAVCTRDIGWRP 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              42 WGN-----DFTCVGVMANDVNEDEKSIQAEFLFMN-----NADTNMQFAT-----EKV 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          69 FMNNADTNMQFATEKVTAV------KMYGYNRENAFRYETEDGQVFTDVIAYSDDNC--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      14 HQDAWKSLKADVENVYYMV----KATYKNDPVWGNDFT---CVGVMANDVNEDEKSIQAEFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NVEVVDLRTVYPLDKETIIDRAKHTGKVLLVTEDNL-----EGSIMSEVSAIIAEHCLF 283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 241;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; TYPE: PRT; ORGANISM: Homo sapiens US-10-144-259-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                     FILE REFERENCE: ELITAA 011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-815-242-5779
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
; ORGANISM: Staphylococcus aureus US-09-815-242-5779
                                                          SOFTWARE: FASU
SOFTWARE: FASU
; SEQ ID NO 5779
FUNCTH: 841
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQ ID NO 17
LENGTH: 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Patent No. US20020061569A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 8.4%;
Best Local Similarity 23.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 5779, Application US/09815242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CURRENT APPLICATION NUMBER: US/10/144,25 CURRENT FILING DATE: 2002-09-04 PRIOR APPLICATION NUMBER: US 09/758,493 PRIOR FILING DATE: 2001-01-11 PRIOR APPLICATION NUMBER: US 60/221,950 PRIOR FILING DATE: 2000-07-31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE OF INVENTION: Identification of Essential Genes TITLE OF INVENTION: Prokaryotes
                                                                                                                                                                                                PRIOR APPLICATION NUMBER: 60/253,625
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR FILING DATE: 2000-12-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Haselbeck, APPLICANT: Ohlsen, K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQ ID NOS: 30 SOFTWARE: FastSEQ for Windows Version 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILE REFERENCE: 00786-548001
                                                                                                                                   NUMBER OF SEQ ID NOS:
                                                                                                                                                      PRIOR APPLICATION NUMBER: 60/269,308 PRIOR FILING DATE: 2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181 P 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              145 P 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             127 DSTHLLVFSTESAFHYEADGANVLAGIMSRNDERCHL----DTTGTYTQYR--TQDYPSV 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 67 WPNSDPPFSFKNVISLTEDVDEFRNKLQGERISGNLDAPEGGFDAILQTAVCTRDIGWRP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              42 WGN-----DFTCVGVMANDVNEDEKSIQAEFLFMN-----NADTNMQFAT-----EKV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       85 TAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCDVIYVPGTDGNEEGYELWTTDYDNI 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Xu, H. Howard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Wall, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ohlsen, Kari L.
Zyskind, Judith W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Carr, Grant J.
Yamamoto, Robert T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Trawick, John D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                              for Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US/10/144,259
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        20; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 78.5;
Pred. No. 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .
B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 241;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              84
```

Query Match

8.28;

Score 76.5;

DВ

9;

Length 841;

```
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Vers:
SEQ ID NO 12751
LENGTH: 841
TYPE: PRT
ORGANISM: Staphylococcus aureus
US-09-815-242-12751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Yamamoto, Kouer APPLICANT: Xu, H. Howard TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: Prokaryotes FILE REFERENCE: ELITRA.011A CURRENT APPLICATION NUMBER: US/09/815,242 CURRENT FILING DATE: 2000-03-21 PRIOR APPLICATION NUMBER: 60/291,078 PRIOR APPLICATION NUMBER: 60/206,848 PRIOR APPLICATION NUMBER: 60/206,848 PRIOR APPLICATION NUMBER: 60/207,727 PRIOR PILING DATE: 2000-05-23 PRIOR APPLICATION NUMBER: 60/207,727 PRIOR APPLICATION NUMBER: 60/207,727 PRIOR FILING DATE: 2000-05-26 PRIOR FILING DATE: 2000-05-26
  Ş
                                               밁
                                                                                        Ş
                                                                                                                                        В
                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                 Query Match 8.2%; Score 76.5; Best Local Similarity 18.4%; Pred. No. 15; Matches 36; Conservative 28; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Similarity 18.4%; Matches 36; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RIOR APPLICATION NUMBER: 60/269,308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LICANT: Haselbeck, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: 60/257,931 FILING DATE: 2000-12-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: 60/253,625
FILING DATE: 2000-11-27
                                                                                                                                 289 DOYTNVRGSFEQVAFAKRKNATTDKTAYKMEVTLGNDTYSEEIIVDYGNKKAOPLISSTN 348
                                           349 YINNEDLSRNMTAYVNQPKNTYTKQTFVTNLTGYKFNPNAKNFKIYEVTDQNQFVDSFTP 408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             469 DTDKTKYSWSNSYSNV 484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                409 DTSKLKDVTDQFDVIYSNDNKTATVDLMKGQTSSNKQYIIQQVAYPDNSSTDNGKIDYTL 468
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         349 YINNEDLSRNMTAYVNQPKNTYTKQTFVTNLTGYKFNPNAKNFKIYEVTDQNQFVDSFTP 408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  289 DOYTNVRGSFEQVAFAKRKNATTDKTAYKMEVTLGNDTYSEEIIVDYGNKKAOPLISSTN 348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    12751, Application US/09815242
o. US20020061569A1
                                                                                      69 FMNNADTNMQFA-----TEKVTAVKMYGY----NRENAFRYETEDGQVFTDV--- 111
                                                                                                                                                                            16 DAWKSLKADVENVYYMV-----KATYKNDPVWGNDFTCVGVMANDVNEDEKSIQAEFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    69 FMNNADTNMQFA-----TEKVTAVKMYGY----NRENAFRYETEDGQVFTDV--- 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               16 DAWKSLKADVENVYYMV-----KATYKNDPVWGNDFTCVGVMANDVNEDEKSIQAEFL 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ohlsen, Kari L.
Zyskind, Judith W.
Wall, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Carr, Grant J.
Yamamoto, Robert T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Trawick, John D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ------IAYSDDN----CDVI-----YV------PGTDGNEEGYEL 136
                                                                                                                                                                                                                                                                                                                                                                                                                                        for Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WITDYDNI 144
-IAYSDDN----CDVI----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; Pred. No. 15; 28; Mismatches
                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                         DB 9;
  --YV---
                                                                                                                                                                                                                              65; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               65;
                                                                                                                                                                                                                                                                         Length 841;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels '67;
----PGTDGNEEGYEL 136
                                                                                                                                                                                                                              67;
                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                 83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
```

DЬ	Qy	DЪ
469 DTDKTKYSWSNSYSNV 484	137WTTDYDNI 144	409 DTSKLKDYTDQFDVIYSNDNKTATVDLMKGQTSSNKQYIIQQVAYPDNSSTDNGKIDYTL 468

Search completed: August 1, 2003, 12:23:45 Job time: 17.9371 secs

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Max 1mum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Minimum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
2
     Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB DB
                                                                            seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              length: 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-10-087-195-7
936
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        August 1, 2003, 12:15:04 ; Search time 13.0286 Seconds (without alignments) 555.330 Million cell updates
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    328717 seqs, 42310858 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Issued_Patents_AA: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NQPDWADEAANGAHQDAWKS.....FNEYAVGRETRDVFTSACLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Copyright
     /cgn2_6/ptodata/1/1aa/5A_COMB.pep:*
/cgn2_6/ptodata/1/1aa/5B_COMB.pep:*
/cgn2_6/ptodata/1/1aa/6A_COMB.pep:*
/cgn2_6/ptodata/1/1aa/6B_COMB.pep:*
/cgn2_6/ptodata/1/1aa/B_COMB.pep:*
/cgn2_6/ptodata/1/1aa/PCTUS_COMB.pep:*
/cgn2_6/ptodata/1/1aa/backfiles1.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length DB
   GenCore version (c) 1993 - 2003
               US-08-790-912-3

US-08-790-912-2

US-09-107-532A-6865

US-09-107-532A-4711

US-09-117-532A-4711

US-09-134-01C-3716

5268463-2

US-08-882-704A-5

US-09-151-957-5

5432081-2

US-09-564-805-240

US-09-564-805-240

US-09-62-126-3

US-09-062-126-3

US-09-488-270A-2

US-09-488-270A-2

US-09-488-270A-2

US-09-488-3417-10

US-09-527-013-10

US-09-527-013-368

US-09-071-035-368

US-09-071-035-368
                                                                                                                                                                                                                                                                                                                                                                          US-09-134-001C-3207

US-08-282-197C-61

PCT-US96-01314-56

PCT-US93-11110-1

US-08-197-28-6

US-08-197-204-2

5221789-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                片
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5.1.6
Compugen
                                                                                                                                                                               Sequence 3, Appli
Sequence 5946, Appli
Sequence 6865, Ap
Sequence 4711, Ap
Sequence 3716, Ap
Sequence 3716, Ap
Patent No. 5268463
Sequence 5, Appli
Sequence 5, Appli
Sequence 5, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                          Sequence 2
Patent No.
                                                                                                                                                                                                                                           Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Description
                 Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                          e 3207, Apple 61, Appli e 56, Appli e 6, Appli e 6, Appli e 2, App
                                                      240, App
3, Appli
2, Appli
2, Appli
10, Appli
10, Appl
10, Appl
                                      10, A
368,
366,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    171
Appli
Appli
                               App
                                                                                                                                                                                                                                           RESULT 2
US-08-282-197C-61
                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-134-001C-3207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: PRT
                                      ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3
3:
 Washington
```

	Sequence 4,	US-08-779-046-4	N	1229	7.6	71	5
4	Sequence	US-08-474-038-4	1	1229	7.6	71	44
۵	Sequence	US-08-176-865-4	-	1229	7.6	71	3
4	Sequence	US-08-100-709-4	_	1229	7.6	71	2
10	Patent No.	5164180-4	σ	1174	7.6	71	1
2	Sequence	PCT-US95-10310-2	υ	1174	7.6	71	Ö
'n	Sequence	US-08-962-190-2	N	1174	7.6	71	39
'n	Sequence	US-08-291-368-2	_	1174	7.6	71	8
ω	Sequence	US-08-040-751-3	ب	1174	7.6	71	37
	Sequence	US-09-269-731-4	4	535	7.6	71	36
e 6764, Ap	Sequence	US-09-328-352-6764	4	347	7.6	71	3
e 7, Appli	Sequence	US-09-254-733-7	ω	223	7.6	71	4
3 405, App	Sequence	US-09-199-637A-405	4	1198	7.6	71.5	ü
e 4, Appli	Sequence	US-08-600-452A-4	N	611	7.6	71.5	ະ
4	Sequence	US-08-386-727-4	Н	611	7.6	71.5	Ξ
9	Sequence	US-08-961-803-9	w	1227	7.7	72	õ
8,	Sequence	US-08-448-170-8	ب	1227	7.7	72	8
e 7, Appli	Sequence	US-08-630-820-7	w	832	7.7	72	8

```
Sequence 3207, Application US/09134001C

Patent No. 6380370

GENERAL INFORMATION:
APPLICANT: Lynn Doucette-Stamm et al
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENTIAL OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENTIAL OF INVENTION: EPIDERMIDIS FOR DIAGNOSTICS AND FILE REFERENCE: GTC-007

CURRENT APPLICATION NUMBER: US/09/134,001C

CURRENT FILING DATE: 1998-08-13

PRIOR APPLICATION NUMBER: US 60/064,964

PRIOR FILING DATE: 1997-11-08

PRIOR APPLICATION NUMBER: US 60/055,779

PRIOR APPLICATION NUMBER: US 60/055,779

PRIOR FILING DATE: 1997-08-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM: Staphylococcus epidermidis US-09-134-001C-3207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 61, Application US/08282197C Patent No. 5871730 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS: 5674
SEQ ID NO 3207
LENGTH: 337
                                                                                                                                                                                                            APPLICANT: Brzezinski, Ryszard
APPLICANT: Dery, Claude V
APPLICANT: Beauliteu, Carole
TITLE OF INVENTION: Thermostable Xylanase
TITLE OF INVENTION: Methods of Use
                                                                                                           NUMBER OF SEQUENCES: 6
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   234 LANDGIDVEVVDLRTVYPLDKATIIER--SQRTGKVLLVTEDNLEGSIMSEVSAIIAENC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183 HKKAYRFLKEEVPETYYTVPLGKADVKRP---GEDITVFCYGLMVN-----YCLQAADI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  69 FMNN-----GDTINMQFATEKVTAVKMYGYNRENAFRYETED----GQVFTDVIAYSDDNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14 HQDAWKSLKADVENVYYMV---KATYKNDPVWGNDFT--CVGVWANDVNEDEKSIQAEFL |: |: || : | | | | | | | | | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | | : | : | | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity 27.5
33; Conservative
E: Sterne, Kessler,
1100 New York Ave.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9.1%; Score 85.5; DB 27.5%; Pred. No. 0.29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  16;
           Goldstein
NW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BB
                                                                                                                                                                                                                                                                          DNA,
                                                        FOX P.L.L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       46;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCES RELATING S AND THERAPEUTICS
                                                                                                                                                                                                                                                                          Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 337;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STAPHYLOCOCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         291
```

COUNTRY:

USA

```
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PCT-US96-01314-56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-08-282-197C-61
                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 56, Application PC/TUS9601314 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEFAX: 202-371-2540 INFORMATION FOR SEQ ID NO:
                                            PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/3
FILING DATE: 30-JAN-95
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                              COMPUTER READABLE FORM:
MEDIUM TYPE: 3.5" Diskette,
                                                                                                                                              CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                     UMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH:
                                                                                                                 FILING DATE:
                                                                                                                                                               SOFTWARE:
                                                                                                                                                                                                                                                                 STATE: Massachusetts COUNTRY: U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMPUTER: IBM PC
OPERATING SYSTEM:
               REGISTRATION NUMBER:
                                                                                                                             APPLICATION NUMBER:
                                                                                                                                                                                 OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                  STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REGISTRATION NUMBER: 33,851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: US/0 FILING DATE: 29-JUL-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE: PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                    ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               172 PDWFFRENFSQNGAYVSKDIMNQRLESMIKNTFAALKSQYPNLDVYSYD-VC-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3 PDW---ADEAANGAH--QDAW-KSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDV 56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  43;
                                                                                                                                                                                                                                                    02110-2804
                                                                                                                                                                                                                                                                                                    Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               amino acids
                                  John W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SDDNCDVIYVPGTDGNEEGYELWTTDYDNIPANC---LNKFNEYAVGRETRDVFTSA 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Cimbala, Michele A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NEDEKSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNR--ENAFRYETEDGQVFTDVIAY 114
                                                                                                                                                                                                                                                                                                              2: Fish & Richardson P.C.
225 Franklin Street
                                                                                                                                                               WordPerfect (Version 5.1)
                                                                                                                                                                                                                                                                                                                                                                                                                  M. Amin Arnaout
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 both
                                                                                                                                                                                                IBM PS/2 Model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               E: Floppy disk
IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 202-371-2600
                                                                                                               30-JAN-96
                             Freeman
NUMBER:
                                                                                                                                                                                 MS-DOS (Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LFLNNGG-GMRGA-DNSNWVKIYGDDSFVINAFKYARQ-----Y
                                                                                                                                                                                                                                                                                                                                                                                   ANTAGONISTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8.8%;
24.3%;
                                                                                                                                                                                                                                                                                                                                                                                             METHODS FOR IDENTIFYING INTEGRIN
                                                                                                                                PCT/US96/01314
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US/08/282,197C
             29,066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61:
                                                                                                                                                                                                te, 1.44 Mb
50Z or 55SX
00786/267001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 82.5; DB Pred. No. 0.82;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1050.0410000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                 5.0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  --PAGCKLYLNDYNEY-IPAKTNDIYNMA 288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 405;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                71;
```

261

222

13;

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; TOPOLOGY: linear; MOLECULE TYPE: protein PCT-US96-01314-56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PCT-US93-11110-1
Query Match
Best Local S
Matches 37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 1, Application:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                          INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         INFORMATION FOR SEQ ID NO:
                                                                                                                                          SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                         TELECOMMUNICATION INFORMATION: TELEPHONE: 201-822-7255
                                                                                                                                                                                                                                                                                                                                                              COMPUTER: Apple Macintosh
OPERATING SYSTEM: Macintosh 6.
SOFTWARE: Microsoft Word 5.1a
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                          COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                  PRIOR APPLICATION DATA: U. ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NUMBER OF SEQUENCES: 8
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE CHARACTERISTICS:
LENGTH: 252 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELECOMMUNICATION INFORMATION: TELEPHONE: (617) 542-5070
                                                                             MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TELEFAX: 1 200154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STREET:
                                                                                              TOPOLOGY:
                                                                                                                                                                                                                                                     NAME: Lunn, Paul G. REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNTRY: UZIP: 07940
                                                                                                                         LENGTH:
                                                                                                                                                                                       TELEFAX:
                                                                                                                                                                                                    TELEPHONE:
                                                                                                                                                                                                                                        REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                    CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                 FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE:
                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           196 P 196
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         145 P 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       142 DSTHLLVFSTESAFHYEADGANVLAGIMSRNDERCHL---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     85 TAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCDVIYVPGTDGNEEGYELWTTDYDNI 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  42 WGN-----DFTCVGVMANDVNEDEKSIQAEFLFMN-----NADTNMQFAT-----EKV 84
 l Similarity
37; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Madison
                                                                                                           amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Application PC/TUS9311110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPNSDPPFSFKNVISLTEDVDEFRNKLQGERISGNLDAPEGGFDAILQTAVCTRDIGWRP 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          New Jersey
                                                                                                                         489 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       One Giralda Farms
                                                                                                                                                                                         201-822-7039
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Schering Corp.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (617) 542-8906
                                                                                              linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Schering-Plough Corporation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Antagonists of Human Gamma Interferon
: 8
                8.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8.48;
23.18;
                                                                                                                                                                                                                                                                                                                                                                                               Macintosh 6.0.8
                                                                                                                                                                                                                                                                                                                                                PCT/US93/11110
                                                                                                                                                                                                                                                     32,743
                                                                                                                                                                                                                                                                                                  U.S. Patent Application No. 07/980,527 filed November
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       56:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20; Mismatches
                                                                                                                                                                                                                                      JB0285Q
              Score 76.5;
Pred. No. 5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 78.5;
Pred. No. 1.
                                DB 5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5;
                              Length 489;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -DTTGTYTQYR--TQDYPSV 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
```

Conservative

30;

Mismatches

55;

Gaps

11;

```
밁
õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-08-871-572B-6
                                                                             ; ANTI-SENSE:
US-08-871-5728-6
              Query Match
Best Local Similarity 19.3
Matches 37; Conservative
                                                                                                                                                                                             TELEFAX: (908) 273-4679 INFORMATION FOR SEQ ID NO:
                                                                                                    TOPOLOGY: un MOLECULE TYPE: HYPOTHETICAL:
                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC Compatible
OPERATING SYSTEM: PC DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   cent No.
                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
LENGTH: 259 amino acids
                                                                                                                                                                                                                                            CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
ANAME: MUCCINO, Richard R.
REGISTRATION NUMBER: 32,5
REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE OF INVENTION:
                                                                                                                                                                                                                                   TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                      COUNTRY: USA
                                                                                                                                                                                                         TELEPHONE:
                                                                                                                                         STRANDEDNESS:
                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: FILING DATE: 9-JUNI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             234 VCITIFNSSIKG 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    72
 4 DWADEAANGAH------QDAWKSLKADV---ENVYYMVKATYKNDPVWGNDF-
                                                                                                                                                                                                                                                                                                                                                                                                                    07901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    , Application US/08871572B 6287853
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Summit
                                                                                                                                                      amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VCRDGKIGPPKLDIRKEEKQIMIDIFHPSVFVNGDEQDVDYDPETTCYIRVYNVYVRMNG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TC----VGVMANDVNEDEKSIQAEF----LFMNNADTNMQFATEKVTAVKMYG-YNRENA 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EWIDACINISHHYCNISDHVGDPSNSLWVRVKARVGQKESAY------AKSEEFA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DWADEAANGAH------QDAWKSLKADV---ENVYYMVKATYKNDPVWGNDF-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCLNKFNEYAVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FRYETEDGQVFTDVIAYSDDNCDVIY----VPGTDGNE-----EG-YELWTTDYDNIPA 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   758 Springfield Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Emmanuel, Stuart
Schwartz, Barbara
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Cook, Jeffrey
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Donnelly, Rober
Mariano, Thomas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ----SEIQYKILTQKEDDCDEIQCQLAIPVSSLNSQYCVSAEGVLHVWGVTTEKSKE 233
                                                                                         š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kotenko,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pestka, Sidney
                                                                                                                             unknown
                                                                                                                                                                                                                                                                                                   9-JUNE-1997
N: 435
                                                                                                                                           unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Jaemog
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Accessory Factor for Interferon Gamma and Its Receptor : 17
                                    8.1%;
19.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Serguei
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       158
                                                                                                                                                                                                                                                                                                                                                   Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Robert
                                                                                                                                                                                                                                                                                                                         US/08/871,572B
                                                                                                                                                                                               <u>ه</u>
                           29;
                        Score 75.5; DB
Pred. No. 2.5;
29; Mismatches
                                                                                                                                                                                                                                                UMD1-011
                                                   DΒ
                         71;
                                                u
V
                                                Length 259;
                         Indels
                         55;
                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              46
 46
                           11;
                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                 밁
                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                           õ
                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                             STI
```

```
RESULT 7
5221789-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; ORGANISM: Homo sapiens
US-08-190-204-2
                                                                                                                                             ;Patent NO. 5221789
; APPLICANT: NOVICK, DANIELA;RUBINSTEIN, MENACHEM
; TITLE OF INVENTION: INTERFERON-GAMMA RECEPTOR FRAGMENT AND
                    SEQ ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQ ID NO 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CURRENT APPLICATION NUMBER: US/08/190,204
CURRENT FILING DATE: 1994-02-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Ward, Rebecca H.R.
TITLE OF INVENTION: TREATMENT OF INFAMMATORY BOWEL DISEASE WITH IFN-GAMMA
TITLE OF INVENTION: INHIBITORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR FILING DATE:
NUMBER OF SEQ ID NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: 07/997,835 PRIOR FILING DATE: 1992-12-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILE REFERENCE: 11669.90USWO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH: 48
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION NUMBER: PCT/US93/11966
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Ashkenazi, Avi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOFTWARE: PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              equence 2, Applic
tent No. 6558661
                                                                            NUMBER OF SEQUENCES: 1
CURRENT APPLICATION DATA:
                                                                                                                             PRODUCTION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8.1%;
Local Similarity 19.3%;
hes 37; Conservation
                                      APPLICATION NUMBER: US/07/578,826 FILING DATE: 07-SEP-1990
LENGTH: 489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                           147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                   234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 47 TC----VGVMANDVNEDEKSIQAEF----LFMNNADTNMQFATEKVTAVKMYG-YNRENA 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            72 EWIDACINISHHYCNISDHVGDPSNSLWVRVKARVGQKESAY---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4 DWADEAANGAH------QDAWKSLKADV---ENVYYMVKATYKNDPVWGNDF- 46
                                                                                                                                                                                                                                                                                                   VCITIFNSSIKG 245
                                                                                                                                                                                                                                                                                                                                         NCLNKFNEYAVG 158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VCRDGKIGPPKLDIRKEEKQIMIDIFHPSVFVNGDEQEVDYDPETTCYIRVYNVYVRMNG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Application US/08190204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VCITIFNSSIKG 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VCRDGKIGPPKLDIRKEEKQIMIDIFHPSVFVNGDEQEVDYDPETTCYIRVYNVYVRMNG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EWIDACINISHHYCNISDHVGDPSNSLWVRVKARVGQKESAY------AKSEEFA 120
                                                                                                                                                                                                                                                                                                                                                                                                                              FRYETEDGQVFTDVIAYSDDNCDVIY----VPGTDGNE-----EG-YELWTTDVDNIPA 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NCLNKFNEYAVG 158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -----SEIQYKILTQKEDDCDEIQCQLAIPVSSLNSQYCVSAEGVLHVWGVTTEKSKE 233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TC----VGVMANDVNEDEKSIQAEF----LFMNNADTNMQFATEKVTAVKMYG-YNRENA 97
                                                                                                                                                                                                                                                                                                                                                                                    -----SEIQYKILTQKEDDCDEIQCQLAIPVSSLNSQYCVSAEGVLHVWGVTTEKSKE 233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FRYETEDGQVFTDVIAYSDDNCDVIY----VPGTDGNE-----EG-YELWTTDYDNIPA 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1993-12-09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1994-02-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 75.5; D
Pred. No. 6.4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 489;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ---- AKSEEFA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          55;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
```

```
; MOLECULE TYPE: US-08-790-912-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME: Leary, Kathryn
REGISTRATION NUMBER: 36,317
REFERENCE/DOCKET NUMBER: 7600-4U1
TELECOMMUNICATION INFORMATION:
TELEPHONE: (215) 567-2020
TELEFAX: (215) 567-2991
TELEX: 831-494
INFORMATION FOR SEQ ID NO: 3:
SEQUENCE CHARACTERISTICS:
LENGTH: 1964 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 8
US-08-790-912-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5221789-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 3, Apprical Sequence 
Query Match 8.0%; Score 74.5; I Best Local Similarity 25.2%; Pred. No. 63; Matches 27; Conservative 19; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 60/026,939
FILING DATE: 23-SEP-1996
ATTORNEY/AGENT INFORMATION:
NAME: Leary, Kathryn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDIOM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATIG SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/790,912
FILING DATE: 29-JAN-1997
CINCELLIA COLUMNIA CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Weiser, Jeffrey N.
APPLICANT: Plaut, Andrew G.
TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR TREATMENT
TITLE OF INVENTION: OF STREPTOCOCCUS PNEUMONIAE INFECTION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQUENCES: 1
                                                                                                                                                                                                                                                                                                                                                                          TYPE: amino acid
STRANDEDNESS:
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STREET: 1601 Market
CITY: Philadelphia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Match 8.1%; Score 75.5; DB 6; Length 489; Local Similarity 19.3%; Pred. No. 6.4; See 37; Conservative 29; Mismatches 71; Indels 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  234 VCITIFNSSIKG 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             147 NCLNKFNEYAVG 158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121 VCRDGKIGPPKLDIRKEEKQIMIDIFHPSVFVNGDEQEVDYDPETTCYIRVYNVYVRNNG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      98 FRYETEDGQVFTDVIAYSDDNCDVIY----VPGTDGNE-----EG-YELWTTDYDNIPA 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      47 TC----VGVMANDVNEDEKSIQAEF----LEMNNADINMQFATEKVTAVKMYG-YNRENA 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          72 EWIDACINISHHYCNISDHVGDPSNSLWVRVKARVGQKESAY------AKSEEFA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4 DWADEAANGAH------QDAWKSLKADV---ENVYYMVKATYKNDPVWGNDF- 46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Application US/08790912
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pennsylvania
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          E: PANITCH SCHWARZE JACOBS & NADEL, P.C
1601 Market Street, 36th Floor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ----SEIQYKILTQKEDDCDEIQCQLAIPVSSLNSQYCVSAEGVLHVWGVTTEKSKE 233
                                                                                                                                                                                                                                                                                                                      protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   29; Mismatches 71; Indels 55; Gaps 11;
                                                                                                                           DB 2;
      32;
                                                                                                                    Length 1964;
      Indels
      29;
Gaps
5;
```

RE US	υр	Фр		us;		·· ·· ··									٠. ٠.	٠. ٠.		٠. ٠.			Gα	U	Ю	D	o
RESULT 10 US-09-107- ; Sequence ; Patent N ; GENERA	8 4	вч	Query M Best Lo Matches	-08	INF		н	⊅		יי	o		C	1			O Z	нн	> >	Sequ Pate GEN	RESULT	Ъ	Qγ	망	Qy
Pro53	113 1246	119	Matc Local es	TYPE: amino TOPOLOGY: 1 MOLECULE TYPE: -790-912-2	INFORMATION FOR SEQUENCE CHARA	TELEPHONE: (215) 567-2020 TELEFAX: (215) 567-2991 TELEX: 831-494	REFERENCE/DO ELECOMMUNICAT	ATTORNEY/ NAME:	APPLICATION FILING DATE	CLASSIFICATION: PRIOR APPLICATION	CURRENT APPLICATION D APPLICATION NUMBER:	OPERATING SYSTEM: SOFTWARE: Patent	COMPUTER RE MEDIUM TY	COUNTRY:	CITY: STATE:	ADDRESSEE STREET:	NUMBER OF SEQUENCES:	TITLE (Sequence 2 Patent No. GENERAL I	9-9	117	H	1124	_
532A-5 5946, 5946 5. 658 1 INFO PPLICA		61 1	th Simi 27;	2-106	Ξ Ħ Θ	XA?	MEN	7 X	G CA	APP	CA	ARI	.+)			ESS:	P OF	မှု မှု	ANI	2, A 1NFO	Ŋ	73	113		61
Z Z 3. 9	AYSE : : S-NK	KSIQAEFLFMNN : : KNIEKLLPFYN-	imil	amino Y: 1 TYPE:	FOR SEQ ID NO: CHARACTERISTICS: 2052 amino aci	831 831	NIC.	AGENT Leary,	DATE:	SSIFICATION: 424 APPLICATION DATA:	APPLICATION CATION NUMBER	E 6.	READABLE TYPE: F	9103-	Philadelphia Pennsylvani	16	SE(INVENTION:		FH - 1994		S-N:	AYSI	KNIEKLLPFYN-	KSI(
of ppl ppl 175 IATI	DNC)AEF	ari	Ħ,	OR SEQ ARACTE 2052 a	215	DOCKET DATION	. `	 Z	TION	CA	SYST Pat	3: 3:	USA 3-23	lade insy	1601		EUL	Weiser Plaut,	OPLICAT 16542 RMATION		KOTI	DDN	EK L	ΩAΕΙ
46 Applicat 275 MATION: T: Lynn	DVI : :	А.Я.Ч. М.Я.Т.	ty	o acid linear : pro	Q ID TERIST	5 5 5	KET NUM	Kathryn	NUMBER:	ž~,	MBE	YSTEM: 1	ABLE F	m	hiladelphia Pennsylvania	PANITCH 1 Market	NCES: ADDRESS	0 N	. н	N:		NKI.	[VQ	LPE3	-EI
A io	HTT	N	2 ati	tei	ID N	67-	NEO	hry	R: SEP	424 DATA	R:	Ħ,	PORM:			e =	33		And			TLE	IVY	Ž-	- ŃN
n US/0910 Doucette-	GID -	DTN	8.0%; ilarity 25.2%; Conservative	n	NO: 2	299	NUMBER:	AGENT INFORMATION: Leary, Kathryn	JMBER: US 60 23-SEP-1996		ION DATA: MBER: US/08/790,912	PC-DOS/MS	Floppy disk	•		SCHWARZE t Street,	: 10	COMPOSITIONS OF STREPTOCO	, Jeffrey Andrew (o/so		IYND -	ĞTD		DTN
s/09	SNEI	MQFA	⊢		n 2:	1	R: 7	ກ ນີ້.	0	,	,08 ,08	os/i	sk tible			WAR.		POSITIONS AND		/08/90912) i	SSH	GNE	-	MOF
9107	EKFD	ATER	Scc Pre				7600-	17	/026		/790	e #:	Þ			ZE .		TIO	Z	160		EKE:	EGY	1	ATE
/09107532A ette-Stamm	EL-W	(VTA	ore Mis)-401		5,93), 91	\$-DOS #1.0,				JACOBS 36th Flo		a		N.)	DLK.	- EE	KST	- KVI
	GIO HE	VKM -	74. No. mat				1		9		2			•)BS		AND				TOT	TTT	ZY:	- VK)
and	SDDNCDVIYVPGTDGNEEGYEL-WTTDYDNIPA :	GNL	Score 74.5; I Pred. No. 67; 9; Mismatches									Version				8 %		MET				S-NKQTANKLLLHYNDHSSEKFDLKYQTDFANLP	NDY	GNE	ſΥGΥ
, David	AYSDDNCDVIYVPGTDGNEEGYEL-WTTDYDNIPANCLNKFNEYAVG : : : : : : : :	KSIQAEFLEMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVI : :	s S													NADEL,		METHODS FO				-AT	AYSDDNCDVIYVPGTDGNEEGYEL-WTTDYDNIPANCLNKFNEYAVG	KSTIVKYGNLVKENSLLYQKELLSAVMMKDDQVITDIV	KSIQAEFLEMNNADTNMQFATEKVTAVKMYGYNRENAFRYETE-
	KCLN	NAFF : SLI	2; 32;									#1.0						S F					NCL	NSI.	NAF
Bus	KFZ	YQX :- TEYS	۳									30				P.C		ᆩᆓ					NKFI	LYQI	-RYES
h	EYAVG : EYNLG	ELL.	Length Indels													•		TREAT				-EYNLG	NEY?	ŒLI	- E
•		SAV	U)															TREATMENT NFECTION						SAV	
	158 1283	I	2052; 29															Ž				1210	158	MMK	-
	w	000	, ,																			0		DDQ -	- BG - DG
		DGQVFTDVI :: DDQVITDIV	Gaps																					VITI	DGQVFTDVI
			Ğ.											,										۸IO	ĭ¥
		112 1245	Çī.																					1172	112
		٠,	••																					2	

```
δ
                                                                                                                                                                                                                                                                                                                                                                      ₽
                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                       망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                              US-09-107-532A-6865
                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-107-532A-5946
                                                            Sequence 6865, Application US/09107532A

Patent No. 6583275

GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: Lynn A Doucette-Stamm and David Bush
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO
ENTEROCOCCUS FAECIUM FOR DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEFAX: (781)893-8277
INFORMATION FOR SEQ ID NO: 5946:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: 60/085,598
FILING DATE: 14 May 1998
APPLICATION NUMBER: 60/051571
FILING DATE: July 2, 1997
ATTORNEY/AGENT INFORMATION:
NAME: Ariniello, Pamela Deneke
REGISTRATION NUMBER: 40,489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/107,532A
FILING DATE: 30-Jun-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NAME/KEY: misc_feature LOCATION: (B) LOCATION 1...420 SEQUENCE DESCRIPTION: SEQ ID NO: 5946:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TOPOLOGY: linear MOLECULE TYPE: protein HYPOTHETICAL: YES ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CORRESPONDENCE ADDRESS:
ADDRESSEE: GENOME THERAPEUTICS CORPORATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE/DOCKET NUMBER: GTC-012
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER READABLE FORM
    CORRESPONDENCE
ADDRESSEE:
                                            NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO ENTEROCOCCUS FAECIUM FOR DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                                     343
                                                                                                                                                                                                                                                                                                                           115
                                                                                                                                                                                                                                                                                                                                                                      302
                                                                                                                                                                                                                                                                                                                                                                                                                                                           261 DWDD----
                                                                                                                                                                                                                                                                                                                                                                                                            58 EDEKSIGAEF----LFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAY 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4 DWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDV-----N 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            41; Conservative
                                                                                                                                                                                                                                                                                 --DSTN-----GDGSNSEGY----TDYSSYSENTYDQYQDPNTYYQQTEDTSQYYT 387
                                                                                                                                                                                                                                                                                                                           SDDNCDVIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNE----YAVGRETRDVFT 166
                                                                                                                                                                                                                                                                                                                                                                    NDLLSIQNELKKQLNIKTSDTLPNLKNE-----NASMMFFDDSEDG------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER: PC
OPERATING SYSTEM: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STATE: Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CITY: Waltham
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM: Enterococcus faecium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE: ASCII
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDIUM TYPE: CD/ROM ISO9660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ZIP: 02354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100 Beaver Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7.9%;
    GENOME THERAPEUTICS CORPORATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (781)893-5007
                                                                                                                                                                                                                                                                                                                                                                                                                                                           -----MLDVATNYTPAFETIKQDQLQGE-----GQMINDIYYQILGK 301
                                            7310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 74; DB 4; Length 420; Pred. No. 7.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                      342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9;
                                                                                                                                          RESULT 12
US-09-107-532A-4711
US-09-107-532A-4711
; Sequence 4711, Application US/09107532A
; Sequence 4711, Application US/09107532A
; Patent No. 6583275
; GENERAL, INFORMATION:
APPLICANT: Lynn A Doucette-Stamm and David Bush
APPLICANT: Lynn A Doucette-Stamm and David Bush
TITLE OF INVENTION: MUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO
ENTEROCOCCUS FAECIUM FOR DIAGNOSTICS AND THERAPEUTICS
UNUMBER OF SEQUENCES: 7310

NUMBER OF SEQUENCES: 7310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ;; NAME/KEY: mlsc_feature;; LOCATION: (B) LOCATION 1...1; SEQUENCE DESCRIPTION: SEQ ID NO: US-09-107-532A-6865
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX: (781)893-8277 INFORMATION FOR SEQ ID NO: 6865:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: 60/085,598
FILING DATE: 14 May 1998
APPLICATION NUMBER: 60/051571
FILING DATE: July 2, 1997
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: US/09/107,532A FILING DATE: 30-Jun-1998 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OPERATING SYSTEM: <Unknown>
SOFTWARE: ASCII
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM:
MEDIUM TYPE: CD/ROM ISO9660
                                                              ZIP: 02354
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MOLECULE TYPE: protein HYPOTHETICAL: YES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE CHARACTERISTICS:
LENGTH: 113 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEPHONE: (781)893-5007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     122 IYVPG--TDGNEEGYELWTTDYDNIPANCL-NKFNEYAVGRETRDVFTS 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 VSYPGEVTHGKKRTYYKIT----EIGRNLLEEKKQEWLT---TKDVVTS 102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          67 FLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYS-----DDNCDV 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     э́2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 FQVMEYADTMMRLFYRSFNKNDSYGYEISKTIRERTNDSYVIKETTLYSVFARLEKNQLI 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMPUTER: PC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STATE: Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CITY: Waltham
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STREET: 100 Beaver Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME: Ariniello, Pamela Deneke REGISTRATION NUMBER: 40,489
                      COMPUTER:
                      MEDIUM TYPE: CD/ROM ISO9660
COMPUTER: PC
                                                                                                           COUNTRY: USA
                                                                                                                             STATE: Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM: Enterococcus faecium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE/DOCKET NUMBER: GTC-012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                02354
SYSTEM: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       7.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 73.5; D
Pred. No. 1.3;
8; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ...113
NO: 6865:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     54;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 113;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     15;
```

Gaps

SOFTWARE: ASCII

```
; ORGANISM: Staphylococcus epidermidis US-09-134-001C-3716
                                                                                                                                                                                                                                                                                                                                                                                                                            US-09-134-001C-3716
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-107-532A-4711
                                       Query Match
     Matches
                                                                                                                                               NUMBER OF SEQ ID NOS:
SEQ ID NO 3716
                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                    Sequence 3716, Application US/09134001C Patent No. 6380370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                 PRIOR APPLICATION NUMBER: US 60/064,964
PRIOR FILING DATE: 1997-11-08
PRIOR APPLICATION NUMBER: US 60/055,779
PRIOR FILING DATE: 1997-08-14
                                                                                                                                                                                                                                                                                            APPLICANT: Lynn Doucette-Stamm et al TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO STAPHYLOCOCCUS TITLE OF INVENTION: EPIDERMIDIS FOR DIAGNOSTICS AND THERAPEUTICS FILE REFERENCE: GTC-007
                                                                                                                                                                                                                                                          CURRENT APPLICATION NUMBER: US/09/134,001C CURRENT FILING DATE: 1998-08-13
                                                                                                               TYPE: PRT
                                                                                                                                 ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEFAX: (781)893-8277
INFORMATION FOR SEQ ID NO: 4711:
     Local Similarity 23.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: misc_feature LOCATION: (B) LOCATION 1...4 SEQUENCE DESCRIPTION: SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TOPOLOGY: linear MOLECULE TYPE: protein HYPOTHETICAL: YES ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE/DOCKET NUMBER: GTC-012
TELECOMMUNICATION INFORMATION:
TELEPHONE: (781)893-5007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/107,532A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                144 GFVTEDN---LYLDST 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           44 DFEFIYPIVEATYSDLGRPSIDPV--
                                                                                                                                1335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         24 DVENVYYMVKATYKN-----DPVWGNDFTCVGVMANDVNEDEKSIQAEFLF------ 69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
32; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IKEVDTNVAYRWFLGYSFEEKIPHFSTFGKNYVRRFRETT----VFEDIFAYILEQAVKA 143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MNNADTNMQFA-----TEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAY------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ---SDDNCDVIYVPGT 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM: Enterococcus faecium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME: Ariniello, Pamela Deneke
REGISTRATION NUMBER: 40,489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: 60/051571 FILING DATE: July 2, 1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: FILING DATE: 14 May
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 489 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION DATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                7.9%;
7.8%; Score 73; DB 23.7%; Pred. No. 53; Live 18; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             30-Jun-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               19; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 73.5;
Pred. No. 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60/085,598
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ..489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         4711:
                                     DB 4; Length 1335;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               30;
 46;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 489;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KLVFIQYLFGIRSMRQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           55;
 52;
Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         87
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ğ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δã
```

GENERAL INFORMATION:

APPLICANT:

APPLICANT: Wilson, KE APPLICANT: Leader, M: TITLE OF INVENTION: ON SEQUENCES:

Wilson, Katherine J.

Leader, Michael Jefferson, Richard A.

GLUCURONIDE REPRESSORS

AND USES

THEREOF

CORRESPONDENCE ADDRESS:

ADDRESSEE:

STREET: C. STREET: Seattle

6300 Columbia Center,

701

Fifth Avenue

SEED and BERRY LLP

COUNTRY:

USA

Washington

98104-7092

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30

CURRENT APPLICATION DATA:

```
밁
                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                      US-08-882-704A-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                       RESULT 15
                                                                                                                                                                                                                                                                                                                                                                                               5268463-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5268463-2
;Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                SEQ ID NO:2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CONSTRUCT
Sequence 5, Application US/08882704A Patent No. 5879906
                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local
                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION DATA:
APPLICATION NUMBER: 119,102
FILING DATE: 10-NOV-1987
APPLICATION NUMBER: 264,586
FILING DATE: 31-OCT-1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NUMBER OF SEQUENCES: 9
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: JEFFERSON TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: US/0
FILING DATE: 08-DEC-1989
                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH: 600
                                                                                                                                                                                 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       412
                                                                                                           470 YVQSG-DLETAEKVLEKELLAWQEKLHQPIIITEYGVDTLAGLHSMYTDMWSEEY 523
                                                                                                                                                                                                                                                  368 NKPKELYSEEAVNGETQQAHLQAIKELIARDKNHPSVVMWSIANEPDTRPQVHGNISPLA 427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  329
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         128 DGNEEGYE---LWTTDYDNIPANCLNKFNEYA 156
                                                                                                                                              93
                                                                                                                                                                                                               33 KATYKNDPVWGNDFTCVGVMANDVNEDEKSIQAEFLFMNNADTNMQFATEKVTAVKMYGY 92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19 KSLKAD-VENVY--YMVKATYKND---PVWGNDFTCVGVMANDVNEDEKSIQAEFLFMNN 72
                                                                                                                                                                                                                                                                                                                       1 Similarity 23.4
41; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             5268463
                                                                                                                                                                                                                                                                                     1 NQPD--WADEAANG----AHQDAWKSLKA-----
                                                                                                                                          NRENAFRYETEDGQVFTDVIAYSDDNCDVIYVP--GTD---GNEEGY-ELWTTDY 141
                                                                                                                                                                               EATRKLDPT -- RPITCVNVMFCDAHTDTISDLFDVLCLN--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     YGNQRFINVEIVHTHDYDSF-ARSMNNYADYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ADTIMQFATEKVTAVKMYGYNRENAFRYETEDGQVF----TDVIAYSDDNCDVIYVPGT 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KNMKAPRIEEDYTSYFPKYGYRNGVGRP-----EGIVVHDTANDNSTIDGEIAFMKR 380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         JEFFERSON, RICHARD A.
                                                                                                                                                                                                                                                                                                                                         7.78;
23.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US/07/447,976
                                                                                                                                                                                                                                                                                                                        26;
                                                                                                                                                                                                                                                                                                                                         Score 72.5;
Pred. No. 19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NYTNAFVHAFVDGNRIIETAPTDYLSWG-
                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                        DB 6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     442
                                                                                                                                                                                                                                                                                                                        55;
                                                                                                                                                                                                                                                                                                                                                          Length 600;
                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                     ----DVE----NVYYMV 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENE
                                                                                                                                                                                 -----RYYGW
                                                                                                                                                                                                                                                                                                                        53;
                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGP 411
                                                                                                                                                                                 469
```

```
APPLICATION NUMBER: US/08/882,704A
FILING DATE: 25-JUN-1997
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: NO. 5879906tenburg Ph.D., Carol
REGISTRATION NUMBER: 39,317
REGISTRATION NUMBER: 39,317
REFERENCE/DOCKET NUMBER: 190106.404
TELECOMMUNICATION INFORMATION:
TELEPHONE: (206) 632-6031
INFORMATION FOR SEQ ID NO: 5:
SEQUENCE CHARACTERISTICS:
SEQUENCE AND SCIDENT SCIENT SCIDENT SCIDE
```

THIS PAGE BLANK (USPTO)

```
Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Run
                                                                                                                                                                                                                                                                                                                         Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Minimum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Total number
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Title:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OM protein -
                                                                                                                                                                                                                                                                                           ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ••
                                                                                                                                                                                                                                                                                           Score
                                                                                                                                                                                                                                                                                                                                                                                                                                          19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             seq
                                                      630
630
630
630
630
                                                                                                                                                                                                                                                                                                                                                                                                                                    greater than
s derived by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A_Geneseq_19Jun03:*

1: /SIDS1/gcgdata/gen
2: /SIDS1/gcgdata/gen
3: /SIDS1/gcgdata/gen
4: /SIDS1/gcgdata/gen
6: /SIDS1/gcgdata/gen
6: /SIDS1/gcgdata/gen
6: /SIDS1/gcgdata/gen
9: /SIDS1/gcgdata/gen
10: /SIDS1/gcgdata/gen
11: /SIDS1/gcgdata/gen
12: /SIDS1/gcgdata/gen
13: /SIDS1/gcgdata/gen
14: /SIDS1/gcgdata/gen
15: /SIDS1/gcgdata/gen
16: /SIDS1/gcgdata/gen
17: /SIDS1/gcgdata/gen
18: /SIDS1/gcgdata/gen
19: /SIDS1/gcgdata/gen
20: /SIDS1/gcgdata/gen
20: /SIDS1/gcgdata/gen
21: /SIDS1/gcgdata/gen
22: /SIDS1/gcgdata/gen
23: /SIDS1/gcgdata/gen
24: /SIDS1/gcgdata/gen
24: /SIDS1/gcgdata/gen
25: /SIDS1/gcgdata/gen
26: /SIDS1/gcgdata/gen
27: /SIDS1/gcgdata/gen
28: /SIDS1/gcgdata/gen
29: /SIDS1/gcgdata/gen
20: /SIDS1/gcgdata/gen
20: /SIDS1/gcgdata/gen
21: /SIDS1/gcgdata/gen
23: /SIDS1/gcgdata/gen
24: /SIDS1/gcgdata/gen
24: /SIDS1/gcgdata/gen
25: /SIDS1/gcgdata/gen
26: /SIDS1/gcgdata/gen
26: /SIDS1/gcgdata/gen
27: /SIDS1/gcgdata/gen
28: /SIDS1/gcgdata/gen
29: /SIDS1/gcgdata/gen
20: /SIDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-087-195-7
936
1 NQPDWADEAANGA
                                                                                                                                                                                                                                                                                        Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                    is the number of results predicted by chance to have ater than or equal to the score of the result being prived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BLOSUM62
Gapop 10.0 , Gapext 0.5
100.0
100.0
100.0
100.0
67.3
67.3
67.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1107863 seqs, 158726573 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             August 1, 2003, 12:15:04; Search time 53.0914 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               D: //SIDSI/gcgdata/geneseq/geneseqp-embl/AA1980_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1990_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1990_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1991_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1992_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1993_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1994_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1994_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1995_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1995_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1999_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1999_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1999_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2000_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2001_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2001_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2001_DAT:*

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2001_DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NOPDWADEAANGAHQDAWKS....
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1980.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1981.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1982.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1984.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1985.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1986.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1987.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1988.DAT:*
                                                                                                                                                                                                                                                                                           Length
190
190
172
172
190
190
182
                                                                                                                                                                                                                                                                                           BB
   220
220
220
220
220
220
220
                                                                                                                                                                                                                                                                                           ij
                              AAB74289
AAB73261
AAW37447
AAY18079
AAB74288
AAB74288
AAB73260
AAW37446
AAY18078
                                                                                                                                                                                                                                                                                                                                                                                SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ....FNEYAVGRETRDVFTSACLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (without alignments)
511.236 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1107863
                        Histacalin protein Histacalin protein Tick vasoactive am Histamine binding
                                                                                                                                         Histacalin protein
Histacalin protein
Tick vasoactive am
Histamine binding
                                                                                                                                                                                                                                                                      Description
Histacalin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                printed,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ø
protein
```

119 120 120 130 130 130 130 130 130 130 130 130 13	10 11 12 13 14 15 16
	331.5 331.5 331.5 288 285 282 282 282 113
111 100 100 100 100 100 100 100 100 100	
1592 284 221 2338 338 738 738 738 738 738 738 738 740 740 740 740 740 740 740 740 740 740	. 200 200 200 203 209 209 285
22222214 222222222222222222222222222222	22 20 20 20 20 20 20 20
AAR 32925 AAR 32925 AAY 97764 AAY 97764 AAG 2565 ABP 26363 ABP 26363 ABP 26363 ABB 47333 ABB 47333 AAB 42867 AAB 256239 AAR 77674 AAB 256239 AAR 77674 AAB 256239 AAR 12867 AAB 25630 AAB 25630 AAB 2550 AB	AAB73262 AAW37448 AAY18080 AAY18085 AAY18086 AAW37449 AAY18081 AAY18084 AAY18084
Glucosyltransf Histamine bind I. scapularis Follicular con Streptococcus Staphylococcus Staphylococcus Listeria monoc Novel human di Glucoamylase f Arabidopsis th Human ORFX ORF Lung cancer-as Lung cancer-as Lung cancers Lung cancer-as Lung cancer-as	Histacalin Tick vasoa Histamine Histamine Histamine Tick vasoa Histamine Histamine
Glucosyltransferea Histamine binding I. scapularis Salp Follicular conjunc Streptococcus poly Staphylococcus poly Staphylococcus poly Staphylococcus and Movel human diagno Glucoamylase from Arabidopsis thalia Human ORFX ORF2631 Lung cancer associa Novel human diagno R. flavefaciens xyl Drosophila melanog Amino acid sequenc Arabidopsis thalia Chistamine binding C glutamine binding C glutamicum protestaphylococcus aur Staphylococcus aur Staphylococ	Histacalin protein Tick vasoactive am Histamine binding Histamine binding Histamine binding Tick vasoactive am Histamine binding Histamine binding Histamine binding Histamine binding

ALIGNMENTS

RESULT 1 AAB74289 Histacalin; FS-HBP1; conjunctivitis. Histacalin protein FS-HBP2 20-JUN-2001 (first entry) AAB74289 standard; protein; 171 AA. Nuttall PA, Paesen GC 01-SEP-1999; 24-AUG-2000; 2000WO-GB03282. 08-MAR-2001. WO200115719-A2 Unidentified. AAB74289; (EVOL-) EVOLUTEC LTD 2001-257675/26 99GB-0020674.

Use of histacalin proteins for treating or preventing non-infective conjunctivitis, or for manufacturing a medicament for treating or preventing conjunctivitis, e.g. seasonal or perennial allergic conjunctivitis

밁 δÃ 뫄 δÃ 밁 δÃ

```
RESULT 2
AAB73261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  멂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Loc
Matches
  Best
           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                   The present invention relates to a method for treating or prevent allergic rhinitis. The method involves employing a blood-feeding ectoparasite-derived (e.g. tick-derived) histacalin protein. The sequence is one such histacalin protein. The histacalin protein, useful for treating or preventing allergic rhinitis, both season perennial allergic conjunctivitis.
                                                                                                                                                 Use of histacalin proteins for treating or preventing allergic rhinitis, or for manufacturing a medicament for treating or preventing allergic rhinitis, e.g. seasonal or perennial allergic rhinitis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The
                                 Sequence
                                                                                                                                 Disclosure;
                                                                                                                                                                                                  WPI;
                                                                                                                                                                                                                                                                                                                                                       Unidentified
                                                                                                                                                                                                                       Nuttall PA,
                                                                                                                                                                                                                                                                 01-SEP-1999;
                                                                                                                                                                                                                                                                                       24-AUG-2000;
                                                                                                                                                                                                                                                                                                             08-MAR-2001
                                                                                                                                                                                                                                                                                                                                 WO200116164-A2
                                                                                                                                                                                                                                                                                                                                                                         opthalmological;
                                                                                                                                                                                                                                                                                                                                                                                      FS-HBP2; histacalin
                                                                                                                                                                                                                                                                                                                                                                                                            Histacalin
                                                                                                                                                                                                                                                                                                                                                                                                                                 15-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              is
in
                                                                                                                                                                                                                                           (EVOL-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAB73261 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAB73261;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    tor
 Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           r treating or preventing conjunctivitis. The present sequence the histacalin protein FS-HBP1. The invention is particularly useful the treatment of allergic or seasonal conjunctivitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             present invention
                                                                                                                                                                                                 2001-218521/22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -
Similarity
                                                                                                                                                                                                                                            EVOLUTEC LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NOPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KSIQAEFLEMNNADINMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Page 5-6;
                                 171
                                                                                                                                                                                                                                                                                                                                                                                                          protein
                                                                                                                                 Pages 4-6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                      2000WO-GB03287.
                                                                                                                                                                                                                       Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                (first
                                 B
                                                                                                                                                                                                                                                                 99GB-0020673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ₽
X
                                                                                                                                                                                                                                                                                                                                                                         lin protein; antiinflammatory;
allergic rhinitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         protein; 171
                                                                                                                                                                                                                                                                                                                                                                                                          FS-HBP2
                                                                                                                                                                                                                       ရှ
                                                                                                                                                                                                                                                                                                                                                                                                                               entry)
100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             relates to the use of a histacalin
                                                                                                                                19pp; English.
. 0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0,
Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 936; DB 22;
Pred. No. 1.6e-89;
; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Å
936;
No. 1.
. 6e .
                                                                                                                                                                                                                                                                                                                                                                                     antiallergic;
        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein
                                                              seasonal and
                                                                                                         preventing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                     present
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60
```

```
RESULT 3
AAW37147
ID AAW3
AC TICk
XX Fema
KW Fema
KW Fema
KW Inse
KW Lram
AC CO Rhip
FH Key
FT Pept
FH Key
FT Pept
FH Key
FT Pept
FH Key
FT Pept
AXX
IN-P
PD 27-N
XX
IN-P
PD 27-N
XX
IN-P
PD 27-N
XX
IN-P
PD 18-N
PD 18-N
PD WO97
XX
IN-P
PT New
PT Vect
PT Anti
XX
PT New
PT Vect
PT Anti
XX
PT New
PT Vect
PT Anti
CC This
CC This
CC AAW
CCC AAW
CCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                       This protein comprises tick Rhipicephalus appendiculatus (Ra) novel female-specific histamine binding protein 2 (FS-HBP2). Its amino acid sequence was deduced from a cDNA clone (see AAW00228) obtained from a salivary gland cDNA library. FS-HSP1 (see AAW37446) and male-specific HSP1 (see AAW37448) and a related protein, D.RET6 (see AAW37449) from Dermacenter reticularis, were also identified. These novel vascative amine binding proteins (VABPs) can be expressed.
                                                                                                                                                                                                                                                                                                                                                                                                                                          New vasoactive amine binding proteins and related nucleic acid, vectors - transformed cells and transgenic animals, used for assaying or removing histamine and as antihistamine or anti-inflammatory agents
                                               body fluids or cell culture supernatants, e.g. to monitor the effect of allergens; (ii) for binding VA, e.g. to remove histamine from blood, food, cell cultures etc.; (iii) as an antihistamine or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Peptide
                          anti-inflammatory
                                                                                                                             in host cells using e.g. a baculovirus expression system. They be used: (i) to assay histamine (or other VA such as serotonin)
                                                                                                                                                                                                                                                                                                                                                                                             Example
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N-PSDB; AAV00228.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 1998-018506/02.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               19-MAY-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Female-specific vasoactive amine binding protein 1; FS-HCP1; histamine; serotonin; assay; antihistamine; anti-inflammatory;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Tick
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAW37447 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nuttall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (OXFO-) OXFORD VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27-NOV-1997.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO9744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       08-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAW37447;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            transgenic animal;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  insect bite;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       vasoactive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              171;
                                                                                                                                                                                                                                                                                                                                                                                  2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ш
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         \vdash
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVWANDVNEDE
                                                                                                                                                                                                                                                                                                                                                                                       Fig 2; 44pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  snake
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    97GB-0007844
96GB-0010484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  97WO-GB01372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    amine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /label=
  agents, e.g
dermatitis,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          bite;
tick.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Protein; 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 binding
                                                                                                                                                                                                                                                                                                                                                                                          English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  scorpion
                       e.g.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 protein 2
                             for treating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  bite;
     þ
     carrier
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  dermatitis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FS-HBP2
                          insect,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                             snake or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    171
                                                                                                                                                                                                       These
                                                                                                                                                                                                                                     (see
                                                                                                                             can
in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0
```

```
망
RESULT 4
AAY18079
ID AAY11
XX
AC AAY1
XX
AC AAY1
XX
DT 06-A
DT 06-A
DT 06-A
CT 06-C
CC 06-C
CC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        222223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local S
Matches 171
                                                                     This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; drug allergy; abhormal blood pressure; psychological disorder; vaccine respiratory disease; coronary heart disease; cellular growth regulator
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAY18079;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              metazoan parasites, esp
studying inflammation,
                     or serotonin (in animals, plants, cell cultures, food material humans) and in the treatment of various diseases and allergies
                                                                                                                                                                                                         Claim 1; Fig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Histamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAY18079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         histamine-related compounds; (iv) metazoan parasites, especially in
(e.g.
                                                                                                                                                                                                                                                                                                                                                                                                               Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 immune response etc.
histamine than low-a
                                                                                                                                                                                                                                                                                 Histamine and serotonin binding compounds useful for the treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (OXFO-) OXFORD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           be more effective and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    repair;
                                                                                                                                                                                                                                                                                                                                       AAX76965
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NQPDWADEAANGAHQDAWKSLKADVENYYYMYKATYKNDPVWGNDFTCVGVMANDVNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  binding protein FS-HBP2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                         2; 84pp;
                                                                                                                                                                                                                                                                                                                                                                                                               Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ites, especially in animals; (v) as reagents for mmatton, involvement of VA in ulcer formatton or the etc. VABPs provide a more sensitive assay for low-affinity antibodies currently used. They may iffective and safer than conventional antihistamines.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ₹,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VACS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 blood-sucking ectoparasite;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98GB-0013917.
97GB-0025046.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100
                                                                                                                                                                                                         English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           . 09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 936; DB 19;
Pred. No. 1.8e-89;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       in vaccines to protect
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    therapy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
                                                food materials,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         growth regulator;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      190;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                  ဝူ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               79
```

õ

NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE

Query Match Best Local Matches

113;

Conservative

20;

Score 630; DB Pred. No. 1.3e 20; Mismatches

. Зе

Length Indels

0

Gaps

60

Similarity

67.3%;

```
RESULT 5
AAB74288
ID AAB7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          888888%&
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÕ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local S
Matches 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        allergies, abnormal blood pressure, migraine, psychological disorders respiratory disease, and coronary heart disease). Histamine may also lused to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking
                  The present invention relates to the use of a histacalin protein for treating or preventing conjunctivitis. The present sequence is the histacalin protein FS-HBPI. The invention is particularly in the treatment of allergic or seasonal conjunctivitis.
                                                                                              preventing conjunctivitis,
conjunctivitis -
                                                                                                        Use of histacalin proteins for treating or preventing conjunctivitis, or for manufacturing a medicament for preventing conjunctivitis, e.g. seasonal or perennial
                                                                                                                                                                                                                                                                                                          Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence
                                                                           Claim
                                                                                                                                                                         Nuttall PA,
                                                                                                                                                                                                                     01-SEP-1999;
                                                                                                                                                                                                                                          24-AUG-2000;
                                                                                                                                                                                                                                                                08-MAR-2001.
                                                                                                                                                                                                                                                                                     WO200115719-A2
                                                                                                                                                                                                                                                                                                                                Histacalin; FS-HBP1;
                                                                                                                                                                                                                                                                                                                                                      Histacalin
                                                                                                                                                                                                                                                                                                                                                                            20-JUN-2001
                                                                                                                                                                                                                                                                                                                                                                                                  AAB74288;
                                                                                                                                                                                                                                                                                                                                                                                                                        AAB74288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     rhinitis (hay fever), atopic dermatitis,
                                                                                                                                                                                              (EVOL-) EVOLUTEC LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                        4; Page 5-6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD
                                                                                                                                                                                                                                                                                                                                                      protein FS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          190
172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                         Paesen
                                                                                                                                                                                                                                          2000WO-GB03282
                                                                                                                                                                                                                                                                                                                                                                            (first
<u>Α</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ξ
                                                                                                                                                                                                                     99GB-0020674
                                                                       19pp;
                                                                                                                                                                                                                                                                                                                                                                                                                        protein;
                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                            entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         100
                                                                                                                                                                                                                                                                                                                                conjunctivitis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .08;
                                                                         English.
                                                                                                                                                                                                                                                                                                                                                                                                                         172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 936; DB 20;
Pred. No. 1.8e-89;
                                                                                                                                                                                                                                                                                                                                                                                                                         Ą
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     insect bites
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and
                                                                                                          treating
allergic
                                                                                                                               non-infective
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    190;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      food
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            disorders,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                be
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     79
```

```
Ş
                                                       ₽
                                                                              γ
                                                                                                             망
                                                                                                                                                                                                                           밁
                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       B
                                                                                                                                                                       Matches
                                                                                                                                                                                  Query Match
Best Local :
                                                                                                                                                                                                                                                              The present invention relates to a method for treating or preventing allergic rhinitis. The method involves employing a blood-feeding ectoparasite-derived (e.g. tick-derived) histacalin protein. The present sequence is one such histacalin protein. The histacalin protein, is useful for treating or preventing allergic rhinitis, both seasonal and
                                                                                                                                                                                                                                                                                                                                                                          Use of histacalin proteins for treating or preventing allergic rhinitis, or for manufacturing a medicament for treating or preventing allergic rhinitis, e.g. seasonal or perennial allergic rhinitis -
                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI;
                                                                                                                                                                                                                           Sequence
                                                                                                                                                                                                                                                                                                                                                    Disclosure; Pages 4-6; 19pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-SEP-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              08-MAR-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FS-HBP1; histacalin protein; antiinflammatory; antiallergic;
opthalmological; allergic rhinitis.
                                                                                                                                                                                                                                                     perennial allergic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO200116164-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Histacalin protein FS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (EVOL-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  24-AUG-2000; 2000WO-GB03287.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  15-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAB73260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAB73260 standard; protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                        2001-218521/22
               121 VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                        61
                                                                                                                                                                     113;
                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EVOLUTEC LTD.
                                                                                                                          NQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE
VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL
                                                     KNVEAWFMEMNNADTVYQHTFEKATPDKMYGYNKENATTYQTEDGQVLTDVLAFSDDNCY
                                                                     KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD 120
                                                                                                           DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KNVEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTEDGQVLTDVLAFSDDNCY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD 120
                                                                                                                                                                                                                             172
                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (first entry)
                                                                                                                                                                                                                           AA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        99GB-0020673
                                                                                                                                                                                                                                                     conjunctivitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                 67.3%;
                                                                                                                                                                  20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        172
                                                                                                                                                                 Score 630; DB 22;
Pred. No. 1.3e-57;
0; Mismatches 37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ą
                                                                                                                                                                                             Length 172;
                                                                                                                                                                  Indels
 170
                          170
                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             170
                                                                                                           60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                 0;
```

```
RESULT 7
AAW37446
                                                This protein comprises tick Rhipicephalus appendiculatus (Ra) novel C female-specific histamine binding protein 1 (FS-HBP1). Its amino a cid sequence was deduced from a cDNA clone (see AAV00227) obtained from a salivary gland cDNA library. FS-HSP2 and male-specific from a salivary gland cDNA library. FS-HSP2 and male-specific HSP1 (see AAW37447-48) and a related protein, D.RET6 (see AAW37449) from Dermacenter reticularis, were also identified. These novel vasoactive amine binding proteins (VABPS) can be expressed in both cells using e.g. a baculovirus expression system. They can be used: (i) to assay histamine (or other VA such as serotonin) in body fluids or cell culture supernatants, e.g. to monitor the effect of allergens; (ii) for binding VA, e.g. to remove histamine from blood, food, cell cultures etc.; (iii) as an antihistamine or anti-inflammatory agents, e.g. for treating insect, snake or scorpion bites or dermatitis, or as a carrier for slow release of histamine-related compounds; (iv) in vaccines to protect against metazoan parasites, especially in animals; (v) as reagents for studying inflammation, involvement of VA in ulcer formation or the immune response etc. VABPs provide a more sensitive assay for histamine than low-affinity antibodies currently used. They may also the provide a more for the studying inflammation of the provide a more sensitive assay for also he more sensitive assay for the studying inflammation.
                                        also be more effective and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       assaying or removing histamine and as antihistamine anti-inflammatory agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Example 2; Fig 1; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             New vasoactive amine binding proteins and related nucleic acid, vectors - transformed cells and transgenic animals, used for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                histamine; serotonin; assay; antihistamine; anti-in insect bite; snake bite; scorpion bite; dermatitis; transgenic animal; tick.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Female-specific vasoactive amine binding protein 1; FS-HCP1;
histamine; serotonin; assay; antihistamine; anti-inflammatory;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Tick vasoactive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAW37446 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (OXFO-) OXFORD VACS LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 19-MAY-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO9744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       08-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAW37446;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1998-018506/02.
DB; AAV00227.
  190 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        97GB-0007844.
96GB-0010484.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 97WO-GB01372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               amine binding protein 1 FS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /label= Sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              90
                                        safer than
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  190
                                        conventional antihistamines
```

Qy

NQPDWADEAANGAHQDAWKSLKADVENYYYMYKATYKNDPVWGNDFTCVGVMANDVNEDE

Query Match Best Local S Matches 113

al Similarity 66.5

67.3%;

20;

Score 630; DB Pred. No. 1.5e 20; Mismatches

DB 19; ..5e-57; 37;

Length 190; Indels

0;

Gaps

60 0;

```
ANYIBOTAT RESULT 8
ANYIBOTA AN
                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                     Query Match
Best Local S
                                                                               Matches
                                                                                                                                                                                                                                                  This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used as components of vaccines directed against blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; dang allergy; abnormal blood pressure; psychological disorder; vaccine crepiratory disease; coronary heart disease; cellular growth regulator
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Histamine binding
                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Histamine and serotonin binding of allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (OXFO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     tissue repair;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAY18078
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAY18078 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1999-357841/30.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                             al Similarity
113; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1; Fig 1; 84pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              19
                             ۳
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OXFORD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL
NOPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                                                                                                                                                  190
                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  appendiculatus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      98GB-0013917.
97GB-0025046.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     blood-sucking ectoparasite;
                                                                                                                                                                               ξ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein FS-HBP1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ရ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    entry
                                                                                                     67.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            English
                                                                       20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          190
                                                                       Score 630; DB 20;
Pred. No. 1.5e-57;
0; Mismatches 37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      compounds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      useful for
                                                                                                                             Length
                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      the
                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    170
                                                                          Gaps
                             60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           78
                                                                             0
```

```
RESULT 10
AAB73262
ID AAB73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 9
AAB74290
ID AAB7
                                                                                                                          밁
                                                                                                                                                                 Š
                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     $\times CCCCX\times CX\times C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       吊
                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Use of histacalin proteins for treating or preventing conjunctivitis, or for manufacturing a medicament for preventing conjunctivitis, e.g. seasonal or perennial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Histacalin; MS-HBP1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Histacalin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 4; Page 5-6; 19pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (EVOL-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-SEP-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  24-AUG-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  08-MAR-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WO200115719-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20-JUN-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAB74290;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAB74290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 e present invention relates to the use of a histacalin protein relating or preventing conjunctivitis. The present sequence the histacalin protein FS-HBP1. The invention is particularly the treatment of allergic or seasonal conjunctivitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2001-257675/26.
                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          19
                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                       63
                                                                                                                                                                                                                                                                                                                     N
                                                                                                                                                                                                                                                                                                                                                                        w
                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EVOLUTEC LTD
                                                                                                                                                                                                                                                   standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VIYVPGTDGNEEGYELWTTDYDNIPANCLNKFNEYAVGRETRDVFTSACL 170
                                                                                                                     DVIEVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC
                                                                                                                                                                        DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC
                                                                                                                                                                                                                                                                                                                                                                      PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VIYALGPDGSGAGYELWATDYTDVPASCLEKFNEYAAGLPVRDVYTSDCL 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                     PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSDDNCD 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein MS-HBP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        182 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Paesen GC
                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2000WO-GB03282.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    99GB-0020674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                             35.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  conjunctivitis
                                                                                                                                                                                                                                                                                                                                                                                                                         29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 331.5; DB Pred. No. 2e-26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ⋛
                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                      62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22;
                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g non-infective
r treating or
l allergic
                                                                                                                                                                                                                                                                                                                                                                                                                         11;
                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               useful
                                                                                                                                                                        169
                                                                                                                          175
                                                                                                                                                                                                                                                                       119
                                                                                                                                                                                                                                                                                                                        59
                                                                                                                                                                                                                                                                                                                                                                        62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          78
```

AAB73262

standard; protein; 182

B

```
RESULT 11
AAW37448
밁
                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                    Q
                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local
      Male-specific vasoactive amine binding protein 1; MS-HCP1; histamine; serotonin; assay; antihistamine; anti-inflammatory; insect bite; snake bite; scorpion bite; dermatitis; vaccine; transgenic animal; tick.
                                                                      Tick vasoactive
                                                                                                                                                                                                                                                                                                                                                                                                                                      The present invention relates to a method for treating or preventing allergic rhinitis. The method involves employing a blood-feeding ectoparasite-derived (e.g. tick-derived) histacalin protein. The presence use one such histacalin protein. The histacalin protein, is useful for treating or preventing allergic rhinitis, both seasonal and perennial allergic conjunctivitis.
                                                                                                08-JUN-1998
                                                                                                                         AAW37448;
                                                                                                                                                 AAW37448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Use of histacalin proteins for treating or preventing allergic rhinitis, or for manufacturing a medicament for treating or preventing allergic rhinitis, e.g. seasonal or perennial allergic rhinitis -
                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MS-HBP1; histacalin protein; antiinflammatory; antiallergic; opthalmological; allergic rhinitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Nuttall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (EVOL-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-SEP-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      24-AUG-2000; 2000WO-GB03287.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               08-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WO200116164-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Histacalin protein MS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     15-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAB73262;
                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2001-218521/22
                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                             60
                                                                                                                                                                                                                                                                                                                                        w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PA,
                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EVOLUTEC LTD
                                                                                                                                                standard;
                                                                                                                                                                                                       DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC
                                                                                                                                                                                                                                  DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC
                                                                                                                                                                                                                                                            LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                        PDWADEAANGAHODAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKS 62
                                                                                                                                                                                                                                                                            IQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETED--GQVFTDVIAYSD-DNC 119
                                                                                                                                                                                                                                                                                                            PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK
                                                                                                                                                                                                                                                                                                                                                                                                                 182
                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                               A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               99GB-0020673
                                                                     amine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         4-6; 19pp; English.
                                                                                                                                               Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                          35.4%;
                                                                                                                                                                                                                                                                                                                                                               29;
                                                                                                                                                200
                                                                                                                                                                                                                                                                                                                                                                          Score 331.5; DB
Pred. No. 2e-26;
                                                                      protein 1 MS-HBP1
                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                ₿
                                                                                                                                                                                                                                                                                                                                                                                     BB
                                                                                                                                                                                                                                                                                                                                                              62;
                                                                                                                                                                                                                                                                                                                                                                                     22;
                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                     182;
                                                                                                                                                                                                                                                                                                                                                              11;
                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                present
is
                                                                                                                                                                                                                                   169
                                                                                                                                                                                                                                                                                                            59
```

```
δõ
                                                                                           밁
                                                                                                                                    Š
                                                                                                                                                                                 밁
  밁
                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                        from a salivary gland cDNA library. Female-Specific HSP1 and HSP2 (see AAW37446-47) and a related protein, D.RET6 (see AAW37449) from Dermacenter reticularis, were also identified. These novel vasoactive amine binding proteins (VABPs) can be expressed in host cells using e.g. a baculovirus expression system. They can be used: (i) to assay histamine (or other VA such as serotonin) in body fluids or cell culture supernatants, e.g. to monitor the effect of allergens; (ii) for binding VA, e.g. to remove histamine or from blood, food, cell cultures etc.; (iii) as an antihistamine or anti-inflammattory agents, e.g. for treating insect, snake or scorpion bites or dermatitis, or as a carrier for slow release of histamine-related compounds; (iv) in vaccines to protect against metazoan parasites, especially in animals; (v) as reagents for studying inflammatton, involvement of VA in ulcer formation or the immune response etc. VABPs provide a more sensitive assay for histamine than low-affinity antibodies currently used. They may a statical and the statical and the statical activities and the static and the sta
                                                                                                                                                                                                                                                                                                     Query Match
Best Local :
                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           This protein comprises tick Rhipicephalus appendiculatus (Ra) numale-specific histamine binding protein 1 (MS-HBP1). Its amino acid sequence was deduced from a cDNA clone (see AAV00227) obta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New vasoactive amine binding proteins and related no vectors - transformed cells and transgenic animals, assaying or removing histamine and as antihistamine
                                                                                                                                                                                                                                                                                                                                                                        Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Example 2; Fig 3; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    anti-inflammatory agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 1998-018506/02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       27-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WO9744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         19-мат-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                      be more effective and
  138
                                             120
                                                                                           78
                                                                                                                                      63
                                                                                                                                                                                    20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OXFORD VACS LTD
                                                                                                                                                                                                                                                                                                     Similarity
DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC
                          DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC
                                                                                                                   PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK
                                                                                                                                                                                                              PDWADEAANGAHQDAWKSLKADVENYYYMYKATYKNDPVWGNDFTCVGVMANDVNEDEKS
                                                                                        LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                                                                        200 AA;
                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      97GB-0007844
96GB-0010484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         97WO-GB01372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /label= Sig_peptide
79..81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                                   35.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ရှ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Asn is N-glycosylated"
                                                                                                                                                                                                                                                                             29;
                                                                                                                                                                                                                                                                                                                                                                                                                    safer than conventional antihistamines
                                                                                                                                                                                                                                                                          Score 331.5; DB 19
Pred. No. 2.3e-26;
9; Mismatches 62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               related nucleic acid,
c animals, used for
                                                                                                                                                                                                                                                                                                                           DB 19;
                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                           200;
                                                                                                                                                                                                                                                                             11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             obtained
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             novel
                                                                                                                                                                                                                                                                          Gaps
193
```

RESULT 12 AAY18080

77

137

```
Query Match
Best Local S
Matches 74
                                                                                                                                                                                                                                                                                                                                                                                                                                  This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease, Histamine may also be used to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gabtric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator; tissue repair; blood-sucking ectoparasite; therapy.
                                                                                                                                                                                                                                                                                                                                                                           Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 1; Fig 3; 84pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          of allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Histamine and serotonin binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Histamine binding protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAY18080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAY18080 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                        ectoparasites.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (OXFO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1999-357841/30
  138
                                                120
                                                                                           78
                                                                                                                                      63
                                                                                                                                                                                    20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AAX76966
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OXFORD
                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                     DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNYYTDSSC
                                                DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC
                                                                                                                                                                                                                               PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKS
                                                                                           LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                    PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK
                                                                                                                                                                                                                                                                                                                                                                           200
                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      appendiculatus.
                                                                                                                                                                                                                                                                                                                                                                           Ą,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98GB-0013917
97GB-0025046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein MS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ရ
                                                                                                                                                                                                                                                                                                     35.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             serotonin binding compound;
                                                                                                                                                                                                                                                                               29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      200
                                                                                                                                                                                                                                                                                                     Score 331.5;
Pred. No. 2.3
                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  compounds useful for the treatment
                                                                                                                                                                                                                                                                                                       .3e-26;
                                                                                                                                                                                                                                                                                                                             DB 20;
                                                                                                                                                                                                                                                                               62;
                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                           Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                inflammation;
                                                                                                                                                                                                                                                                                                                             200;
                                                                                                                                                                                                                                                                               11;
                                                                                                                                                                                                                                                                               Gaps
  193
                                                169
                                                                                                                                      119
                                                                                                                                                                                      77
```

RESULT 13 AAY18085

ð 밁 Ş 밁 Ş

밁

õ

D-DNCDVIYVPGTDGNEEGYELWT-TDY-DNIPANCLNKFNEYAVGRETRDVFTSACL 170

8

DGQTCDLLYIP---YKENGYELWVRSDYLQNTPTCCQFIFDLVALGRTTYNISTPDCV

```
В
                          å
                                                          밁
                                                                                      ş
                                                                                                                       Matches
                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                          This sequence is an example of a histamine or serotonin binding compound (A), of the invention. cDNA encoding this sequence was isolated from a mixed Boophilus microplus/Ixodes hexagonus cDNA expression library. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rinhitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used to regulate cellular yraccines directed against blood-sucking ectoparasites.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator;
                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim 13; Fig 7; 84pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Histamine and serotonin binding compounds useful for the treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Boophilus microplus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Histamine binding protein; serotonin binding compound;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            06-AUG-1999
                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        tissue repair; blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAY18085 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (OXFO-) OXFORD VACS LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ixodes hexagonus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1999-357841/30
DB; AAX76970.
                             56
                                                           27
                                                                                                                       63;
                                                                                                                                       Similarity
                             VNEDEKSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYS 115
                                                           NEPLKNTTWHSKELKN--YQDAWKSINQNVSTTYYFLRSTYNNDSVWGKNFTCLSVTVTS
                                                                                         NQP----DW-ADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMAND
                                                                                                                                                                                   203 AA;
                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        98GB-0013917
97GB-0025046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              protein
                                                                                                                                    30.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ih/Bm-HBP1
                                                                                                                       35;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       203
                                                                                                                                     Score 288;
Pred. No. 8.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ectoparasite;
                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ₹
                                                                                                                                     DB 20;
.2e-22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         therapy
                                                                                                                                                  Length
                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                inflammation;
                                                                                                                                                      203;
                                                                                                                       14;
                                                                                                                       Gaps
                                                           84
   143
```

```
δÃ
 Ş
                                밁
                                                                                              밁
                                                                                                                        οy
                                                                                                                                                           Matches
                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                            from a mixed Boophilus microplus/Ixodes hexagonus CDNA expression library. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergie rinnitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking ectoparasites.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Histamine and serotonin binding compounds useful for the treatment of allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                   This sequence is compound (A), of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 14; Fig 8; 84pp; English.
                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Boophilus microplus. Ixodes hexagonus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            03-JUN-1999.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO9927104-A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Histamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAY18086 standard; Protein; 203 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (OXFO-) OXFORD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 asthma;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gastric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Histamine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAY18086
                                                                                                                                                                         Local
                                                              57
                                                                                              27
                                                                                                                                                           61;
                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            acid secretion; allergy; type I hypersensitivity reaction;
urticaria; allergic rhinitis; atopic dermatitis; food allergy;
-DNCDVIYVPGTDGNEEGYELWT-TDY-DNIPANCLNKFNEYAVGRETRDVFTSACL 170
                              YESTFTVEYNTTYKNQSQQWVSM-SENVTAVQEGGYSVKNIIQWTTENNTKFNDTVVFTD
                                                                                                            NQP----DWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDV
                                                           NEDEKSIQAEFLFMNNADTNMQFATEKVTAVKMYGYNRENAFRYETEDGQVFTDVIAYSD 116
                                                                                           NEPLEKTTWHNQTL-GRYQDAWKSINQSVGTTYYFLRSTYNNDSVWGKNFTCLSVTVTSK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         binding protein; serotonin binding compound; inflammation;
                                                                                                                                                                                                                      203
                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                    A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 98GB-0013917
97GB-0025046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                              an example of a histamine or serotonin binding the invention. cDNA encoding this sequence was
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         protein Ih/Bm-HBP2.
                                                                                                                                                                        30.4%;
                                                                                                                                                        36;
                                                                                                                                                                      Score 285; DB 20;
Pred. No. 1.7e-21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ectoparasite;
                                                                                                                                                         Mismatches
                                                                                                                                                        68;
                                                                                                                                                                                   Length
                                                                                                                                                        Indels
                                                                                                                                                                                      203;
                                                                                                                                                        12;
                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                 isolated
                                                                                           85
                                                                                                                         56
```

```
145 GQTCDVLXIP---YKEDGYELWVRSEYLQNTPTCCQFIFDLVALGRTTYNISTPNCV
       198
```

밁

```
RESULT 15
AAW37449
                                                                                                                                                                                                 New vasoactive amine binding proteins and related nucleic vectors - transformed cells and transgenic animals, used f assaying or removing histamine and as antihistamine or anti-inflammatory agents
                                                                                                                                                                                                                                                                                                                                                                                                                       Vasoactive amine binding protein; D.RET6; histamine; serotonin; assay; antihistamine; anti-inflammatory; insect bite; snake bite; scorpion bite; dermatitis; vaccine; transgenic animal; tick.
                                                                                                                                                                                                                                           N-PSDB;
                                                                                                                                                                                                                                                   WPI; 1998-018506/02
                                                                                                                                                                                                                                                                                                                                                       W09744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAW37449;
                                                                                                                                                                                   Example 2; Fig 4; 44pp; English.
                                                                                                                                                                                                                                                                   Nuttall PA,
                                                                                                                                                                                                                                                                                                         18-APR-1997;
                                                                                                                                                                                                                                                                                                                                                                               Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Tick vasoactive amine binding protein D.RET6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       08-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAW37449
                                                                                                                                                                                                                                                                                  (OXFO-) OXFORD VACS
                                                                                                                                                                                                                                                                                                  18-MAY-1996;
                                                                                                                                                                                                                                                                                                                          19-MAY-1997;
                                                                                                                                                                                                                                                                                                                                          27 - NOV - 1997
                                                                                                                                                                                                                                                                                                                                                                                                        Dermacenter reticularis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                         97GB-0007844
                                                                                                                                                                                                                                                                                                  96GB-0010484
                                                                                                                                                                                                                                                                                                                          97WO-GB01372
                                                                                                                                                                                                                                                                                                                                                                        /label= Sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Protein;
                                                                                                                                                                                                                                                                                  LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      209
                                                                                                                                                                                                           used for
```

cultures etc.; (iii) as an antihistamine or anti-inflammatory agents, e.g. for treating insect, snake or scorpion bites or dermatitis, or as a carrier for slow release of histamine-related compounds; (iv) in vaccines to protect against metazoan parasites, especially in animals; (v) as reagents for studying inflammation, involvement of VA in ulcer formation or the immune response etc. VABPs provide a more sensitive assay for histamine than low-affinity antibodies currently used. They may also be more This protein comprises tick Dermacenter reticularis (Dr) novel vasoactive amine binding protein (VABP) D.RF76. Its amino acid sequence was deduced from a cDNA clone (see AAV00230) obtained from a Dr salivary gland cDNA library. 3 Novel VASPs, designate FS-HBP1, FS-HBP2 and MS-HBP1 (see AAW37446-48), of the tick Rhipicephalus appendiculatus have also been identified. The VABPs can be expressed in host cells using e.g. a baculovirus expression system. They can be used: (i) to assay histamine (ou other VA such as serotonin) in body fluids or cell culture supernatants, e.g. to monitor the effect of allergens; (ii) for binding VA, e.g. to remove histamine from blood, food, cell cultures etc.; (iii) as an antihistamine or anti-inflammatory and safer than conventional antihistamines. histamine (or designated parasites,

Sequence 209 AA,

Query Match Best Local S Matches 66 Similarity 30.1%; 29; Score 282; Pred. No. 3. Mismatches DB 19; 8.6e-21; nes 69; Length 209; Indels 12; Gaps

8

THIS PAGE BLANK (USPTO)

```
RESULT 15
Q8ZWE
Q8ZWE
AC Q8ZWE
AC Q8ZWE
DT 01-M2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
Search completed: August 4, 2003, 17:17:42 Job time: 99 secs
                                                                                                                                                  밁
                                                                                                                                                                                                          õ
                                                                                                                                                                                                                                                                                  망
                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 7.6%; Score 83; LL...

Best Local Similarity 18.1%; Pred. No. 28;

Conservative 38; Mismatches 56; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Genome sequence of the hyperthermophilic crenarchaeon Pyrobaculum aerophilum.";
Proc. Natl. Acad. Sci. U.S.A. 99:984-989(2002).
EMBL; AE009841; AAL63753.1; -.
Hypothetical protein; Complete proteome.
Hypothetical protein; EAB3000C5244C280 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OBZWE9 PRELIMINARY; PRT; 476 AA.

OBZWE9;
01-MAR-2002 (TrEMBLrel. 20, Created)
01-MAR-2002 (TrEMBLrel. 20, Last sequence update)
01-MAR-2002 (TrEMBLrel. 20, Last annotation update)
Hypothetical protein PAE1819.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
STRAIN-IM2 / ATCC 51768 / DSM 7523;
PubMed-11792869;
PubMed-11792869;
Fitz-Gibbon S.T., Ladner H., Kim U.-J., Stetter K.O., Simon M.I.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pyrobaculum aerophilum.
Archaea; Crenarchaeota; Thermoprotei; Thermoproteales; Thermoproteaceae; Pyrobaculum.
NCBI_TaxID=13773;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Acyltransferase; Transferase.
SEQUENCE 437 AA; 49565 MW; BE816006FA0B720D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Miller J.H.;
                                                                                                                                                                                                       155 YVPN--ADQGCELWVKKSHYKHVPD----YCTF 181
                                                                                                                                                                                                                                                                                                                                                         149 -----GELIKAKDLVVEKLLYKDKVKGITSVAPALERIVVTTKNATSDRKPDPNATET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       356 IFSGDHDMEVPYL----GTQAWIRSLNYSLIDDWRPWMIGDQIAGYTRTY 401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           144 IFTDGELCDVFYVPNADQGCELWVKKSHYKHVPDYCTFVFNVFCAKDRKTY 194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             264 KLVGEYQKCTKRINKALIITPECVDTSPDCYMYRYLLTTY-----WAND-----ENVQ 311
                                                                                                                                          248 YTPNYLNISGCTLGFTGMLYGSIPVIVTAWHCSF 281
                                                                                                                                                                                                                                                                                         202 IKKKI----KEIDSDLEVEVAYAEEARPTLSRGSVFNPLVGGINI--TLIYR-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    65 ENDTGSWGSQFKC--LQVQEIERKEEDYTVTS-----VFTFRNASSPIK-YYNVTET 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               99 VLVLDIDYTAVLAT------GNSSPYWRNYTVIKAWELTWN--NQTARVYQVRLRWSY 148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    37 ELLGKYQDAWKSIDQGVSVT-----YVLAKTTYENDTGSWGSQFKCLQVQEIE 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5 VVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTY 64 | :: | :| | | | | :: |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    n 7.6%; Score 85; DB 17; Length 476; Similarity 24.3%; Pred. No. 31;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  R-----ALHVNKGSIGEWVRCYFEIPYNHDIKSSVPYHMNNSIDGYASL 355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGYK-NIRNAIEYQVGGGLNITDTL 143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      65; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 437;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            46;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ,
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            6;
```

```
RESULT ON ACCORDANCE OF THE CONTROL 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT
033983
ID 03
AC 03
DT 01
DT 01
DT 01
DT 01
DT 01
CO Ba
GN AMM
GN AMM
GN EN
GN I
CO BA
GN I
C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local
   Cherevach I., Davis P., Goodhead I., Stevens K., Mungall K., Berriman M., Pain A., Hall N., Atkin R., Chillingworth C., D. Ormond D., Sanders M., Hayes R., Hall S., Quail M., Barrell Submitted (SEP-2002) to the EMBL/GenBank/DDBJ databases.

EMBL; AL844505; CAD50567.1; -.

SEQUENCE 6761 AA; 797061 MW; 7000C644C420A246 CRC64;
                                                                                                                                                                                                                                                                        Plasmodium falciparum Eukaryota; Alveolata; NCBI_TaxID=36329;
                                                                                                                                                                                                                                                                                                                                                                                                                                           01-MAR-2003 (TrEMBLrel. 23, Created)
01-MAR-2003 (TrEMBLrel. 23, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   033983;
                                                                                                                                                                                                                                                                                                                                                                             MAL6P1.131
                                                                                                                                                                                                                                                                                                                                                                                                            SET-domain protein,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q8IC77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q8IC77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         #INIB: an invasion protein of Listeria type of surface association. f. moi. Microbiol. 25:285-294(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-JAN-1998
01-JAN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=97426036; PubMed=9282740;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Listeria monocytogenes 
Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SMART;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; U82488; AAC45605.1; -.
InterPro; IPR002502; Amidase_2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=1639;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PF01510; Amidase_2; 1.

); SM00644; Ami_2; 1.

NCE 917 AA; 102352 M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        38; Conserv
                                                                                                                                                            FROM N.A.
h I., Davis P.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KYKAMQV-NYEKIEYDKAITAYSRVKTATGNSVWTKPNKTEGAKLVNPLSSYSGKNLRII 324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYY--NVTETVKAV---FQYGYKNIR--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GKGTVWSHD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REAKTSGGTIWYQFSVGG-----KTIGWVDSKALNTFYTPSMEK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDT---GSWG-----S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -----NAIEYQ--VGGGLNITDTLIFTDGELCDVFYVPNADQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATSTATGAQASLQLTYTNVLNLVNLVPSFGYQYSINGVAPQLTNGLD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VTSVFTFRNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VGTHLDGYREKDM-----YQASLAAIYNFTGVLGADSATLFTELVASRVQGLESDVDYYE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCL-----QVQEIERKEEDYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3 (TrEMBLrel.
3 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                               putative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             102352 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7.6%;
23.2%;
                                                                                                                                                                                                                                                                                                           (isolate 3D7).
Apicomplexa; Haemosporida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ------AVTRYLGGTTHTDPVAYFNQWGYNFNNFVSLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 23,05
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 85.5; D
Pred. No. 66;
24; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Last
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21EA2452B4F103B7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bierne H., Lindhal G., Cossart P.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Listeriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6761
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      917
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           monocytogenes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              update)
on update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Listeria
                                                                                                                                                                                                                                                                                                              Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CRC64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                    rth C., Doggett J.,
Barrell B.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           917;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a novel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     91
```

```
RESULT OF SOLUTION OF SOLUTION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                "Full-Length cDNA from Arabidopsis thaliana. Submitted (MAR-2002) to the EMBL/GenBank/DDE EMBL; AC011560; AAG51371.1; -. EMBL; AC013428; AAF76347.1; -. EMBL; AC013428; AAM67067.1; -. EMBL; AY088751; AAM67067.1; -. HSSP; P10619; 11VY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           O9SQX6 PRELIMINARY; PRT; 437 AA.
O9SQX6:
01-MAY-2000 (TrEMBLrel. 13, Created)
01-MAY-2000 (TrEMBLrel. 13, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
Putative glucose acyltransferase.
F13M14.27 OR F18K10.3.
                        InterPro; IPR001563; Serine_carbpept.
Pfam; PF00450; Serine_carbpept; 1.
PRINTS; PR00724; CRBOXYPTASEC.
                                                                                                                                                                                                                                                                                                                                                                                                                              Haas B.J., Volfovsky N., Town C.D., Tr
Feldmann K.A., Flavell R.B., White O.,
"Full-length messenger RNA sequences g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Lin X., Kaul S., Town C.D., Benito M., Creasy T. Ronning C.M., Koo H., Fujii C.Y., Utterback T.R. Bowman C.L., White O., Nierman W.C., Fraser C.M. "Arabidopsis thaliana chromosome III BAC F18K10 Submitted (JUN-2000) to the EMBL/GenBank/DDBJ da
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Lin X., Kaul S., Town C.D., Benito M., Creasy T.H., Haas B.J., Wu Maiti R., Ronning C.M., Koo H., Fujii C.Y., Utterback T.R., Barnstead M.E., Bowman C.L., White O., Nierman W.C., Fraser C.M.; "Arabidopsis thaliana chromosome 3 BAC F13M14 genomic sequence."; Submitted (JAN-2001) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                        annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Arabidopsis thaliana (Mouse-ear cress).

Eukaryota; Viridiplantae; Streptophyta; Embryophyta;

Spermatophyta; Magnoliophyta; eudicotyledons; core eu
eurosids II; Brassicales; Brassicaceae; Arabidopsis.
                                                                                                                                                                                                                                                                                                  Brover V.,
                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                               Genome Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRAIN-cv.
                                                                                                                                                                                                                                                                      Feldmann K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRAIN-cv.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AIN-cv. Columbia;
X., Kaul S., Tow
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6649
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6529
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  64
  PD001189;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          YIGEY --- IRNIISDKRKKYYDKIESSC 6673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HLSEKIKTYIKKSKDSVMKKRIKGCTREVVYNDNVLCKYSNLDTTIFKENEKENVRMDLN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               YENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGYK 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HVPDYCTFVFNVFCAKDRKTYDIFNEEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NIRNAIEYQVGGGLN-----ITDTLIFTDGELC-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                YSHYNAKYGNIYKCLETYILKSVEHNKFIDS-HTFFGLTLPCVVYQIK---YKLFKYMYK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IFEKNIRKTVKYKYNINSAMSYRYLMNISSNLRLYVKKSSIHGYGLYTCEFINEGEPVFE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Columbia;
                                                                                                                                                                                                                                                                                            Troukhan M., Alexandrov
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                            0:0-0(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            7.6%;
16.8%;
                                                                                                                                                                                                                  EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 85.5; DB 5; Pred. No. 8.9e+02;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     YVPNADQGCELWVKKSH--
                                                                                                                                                                                                                                                                                               Z
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Troukhan M.,
O., Salzberg
                                                                                                                                                                                                                                                                                                                                                                                                                              greatly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            201
                                                                                                                                                                                                                                                                                               Lu Y.-P.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     T.H.,
R., Ba
                                                                                                                                                                                                                    databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                             S.L.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            genomic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Alexandrov
                                                                                                                                                                                                                                                                                                  Flavell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Barnstead
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                eudicots;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Haas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sequence.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6761;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В.
                                                                                                                                                                                                                                                                                                  ₽.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                M.E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rosidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .---D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -YK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          6588
```

```
RESULT
OPENAC
OP
                                                                                      밁
                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SERE
                                 ð
                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ş
밁
                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local S
Matches 46
                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                  Sinorhizobium meliloti strain 1021.";
Proc. Natl. Acad. Sci. U.S.A. 98:9877-9882(2001).
EMBL; AL591790; CAC46962.1;
Interpro; IPR000531; TonB_boxC.
Pfam; PF00593; TonB_dep_Rec; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Capela D., Barloy-Hubler F., Gouzy J., Bothe G., Ampe F., Batut Bolstard P., Becker A., Boutry M., Cadieu E., Dreano S., Gloux (Godrie T., Goffeau A., Kahn D., Kiss E., Lelaure V., Masuy D., Pohl T., Portetelle D., Puehler A., Purnelle B., Ramsperger U., Renard C., Thebault P., Vandenbol M., Weidner S., Gailbert F.; "Analysis of the chromosome sequence of the legume symbiont sinorhizobium meliloti strain 1021.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-DEC-2001 (TrEMBLrel. 19, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation updat
putative outer membrane receptor protein.
R02383 OR SMC02721.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Arch.
EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Rhizobium meliloti (Sinorhizobium meliloti)
Bacteria; Proteobacteria; Alphaproteobacter:
Rhizobiaceae; Sinorhizobium.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q92N47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Transferase
SEQUENCE (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      092N47;
                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE 932 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE-21396507; PubMed-11481430;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=382;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pharm. Res
AY029222;
321
                                             146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   494
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  434
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   377
                                                                                           268
                                                                                                                                                                                          221
                                                                                                                                            97
                                                                                                                                                                                                                                          44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              46;
                                                                                                                                                                                                                                                                                        Similarity 25.5
41; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  OPTIGKINEIDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IFTDGELCDVFY 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                YSRFVEYKIDEKKGTVQQVWEYGKERGYDFYSPITSVIEYQKDRDTMFGFGGSINLFDVG 553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Y----YNVTE---TVKAVFQYG-----YKNIRNAIEYQ----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KPVDDKGNALKCDENGKCENTDFDFTYTQHTAWLSSKGTLTIFDNGDGRGLEQPALPTMK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGRN--WAHVNSTAYDAKDDSIILSSRHQGVVK-IGRDKQVKWILAPSKGWNKALASKLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGENPLWAHEE------LLGKYQDAWKSIDQGVSVTYVLAKTTYEN-----
                                           TDG-----ELCDVFYVPNADOGCELWVKKSHYKHVPD-YCT
                                                                                           TYLGLTLDDFKDTPFRRYNASQKDVIDAAHNIYQFSH-----SYEITPDINLTTTVYR
                                                                                                                                         TFRNAS-----SPIKYYN-----VTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIF
                                                                                                                                                                                            DGFKDIDRG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             *DTGSWGSQFKCLQVQEIERKEEDYTVT-----SVFTFRN------ASSPIK
                                                                                                                                                                                                                                        DAWKSIDOGVSVTYVLAKTTYENDTG----SWGSQ--FKCLQ-VQEIERKEEDYTVTSVF
TDTTRAWYKLNDV--RNDSDTG---WVSLSNILADPDTYST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          598 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Res. 24:316-322(2001).
22; AAK31641.1; -.
                                                                                                                                                                                          ·····GDTGFDLTDWGGKLGFRTADGTQNFEFKYQNYDETSNE
                                                                                                                                                                                                                                                                                                                                                                                            101872 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               66501
                                                                                                                                                                                                                                                                                                               7.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  565
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               X
E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Alphaproteobacteria; Rhizobiales;
                                                                                                                                                                                                                                                                                           24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 87;
Pred. No. 2
                                                                                                                                                                                                                                                                                                                  Score 86.5;
Pred. No. 55;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4CE9BB26545F62A5 CRC64;
                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                            E4F6473BAF5AC484 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              M1smatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB
                                                                                                                                                                                                                                                                                                                                           DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2
                                                                                                                                                                                                                                                                                           47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            update)
                                                                                                                                                                                                                                                                                                                                         16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 55;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 598
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                         Length
                                             180
356
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Batut
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VGGGLNITDTL
                                                                                                                                                                                                                                                                                           49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  493
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99
                                                                                                                                                                                                                                                                                           11;
```

```
RESULT
Q8XMD0
                                                                                                                                                                                                                                                                                                                RESULT
051717
                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                           ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                          밁
 Query Match
Best Local S
Matches 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-MAR-2002
01-MAR-2002
01-MAR-2002
                                                       Schirmer A., Jendrossek D.;

"Molecular characterization of the extracellular poly(3-hydroxyoctanoic acid) [P(3HO)] depolymerase gene of Pseudomonas fluorescens GKI3 and of its gene product.";

J. Bacteriol. 176:7065-7073(1994).

EMBL; U10470; AAA64539.1;

Hypothetical protein; Signal.

SIGNAL

1 26

POTENTIAL.
                                                                                                                                                                                                                                       01-NOV-1996 (TrEMBLrel. 01, Created)
01-DEC-2001 (TrEMBLrel. 19, Last sequence up
01-MAR-2002 (TrEMBLrel. 20, Last annotation
Hypothetical 63.2 kDa protein precursor.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Proc. Natl. Acad. Sci. U.S.A. EMBL, AP003188; BABB0465.1; ... Hypothetical protein; Complete SEQUENCE 399 AA; 46802 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Shimalzu T., Ohtani K., Hirakawa H., Ohshima K., Yamashita
Shiba T., Ogasawara N., Hattori M., Kuhara S., Hayashi H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRAIN-13 / Type A;
PubMed-11792842;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacteria; Firmic Clostridium. NCBI_TaxID=1502;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Hypothetical protein CPE0759 CPE0759.
                                              SEQUENCE
                                                                                                                                                             STRAIN-DSM 7139;
                                                                                                                                                                                                                                                                                                   Q51717
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Complete genome sequence of flesh-eater";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Clostridium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q8XMD0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q8XMD0
                                                                                                                                                MEDLINE-95050280; PubMed-7961472;
                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                    Bacteria; Proteobacteria;
                                                                                                                                                                                            NCBI_TaxID=294;
                                                                                                                                                                                                        Pseudomonadaceae; Pseudomonas.
                                                                                                                                                                                                                              Pseudomonas fluorescens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  10
                                                                                                                                                                                                                                                                                                                                                          330
                                                                                                                                                                                                                                                                                                                                                                                138
                                                                                                                                                                                                                                                                                                                                                                                                      282
                                                                                                                                                                                                                                                                                                                                                                                                                                                 224
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        42
                                                                                                                                                                                                                                                                                                                                                                                                                            86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30;
  29;
             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                     KEEDYTVTSVFTFRNASSPIKYYNV------TETVKAVFQYGYKNIRNAIEYQVGGGL
                                                                                                                                                                                                                                                                                                                                                          NLLETL
                                                                                                                                                                                                                                                                                                                                                                                NITOTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                 YEEAKKSLEYIESGFNLMCSRYSENIEMNLSFSRIRETNSNIKASYKEAFKALSMIDM--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        YQDAWKS---IDQG------VSVTYVLAKTTYENDTGSWGSQFKCLQVQEIER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (TrEMBLrel.
(TrEMBLrel.
                                              584 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  perfringens.
irmicutes; Clostridia;
  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                143
                                                                                                                                                                                                                                                                                                                                                          335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         n; Complete
46802 MW;
                                              63249 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7.6%;
           7.68;
                                                                                                                                                                                                                                                                                                                                                                                                      YDNDSKIIKYNELGIIRLFIELAEIKDVHQYCYENIGPILEYDKSHGM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20,
                                                                                                                                                                                                                   Gammaproteobacteria; Pseudomonadales,
  15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Created)
Last sequence Last anno
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 86; DB Pred. No. 20;
 Pred. No. 33;
5; Mismatches
                       Score 86;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Clostridium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99:996-1001(2002).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                    PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        proteome.
61019F007582B815 CRC64;
                                              3AA16FAE898D2CBF CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sequence update)
annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Clostridiales; Clostridiaceae;
                                                                                                                                                                                                                                                                                                    584
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              399
          DB
33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                pertringens,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ₿
                                                                                                                                                                                                                                                                update)
                       <u>ب</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 16; Length
                                                                                                                                                                                                                                                    update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 update)
51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              37;
                      Length 584;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 anaerobic
  12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                            137
                                                                                                                                                                                                                                                                                                                                                                                                      329
                                                                                                                                                                                                                                                                                                                                                                                                                                                 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        85
  'n
```

٠

```
멍
                 Ş
                                            밁
                                                                 Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ф
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ο
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SORRIRAR
                                                                                           Query Match
Best Local S
Matches 49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local S
Matches 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Valenzuela J.G., Francischetti I.M., Pham V.M., Mather T.N., Ribeiro J.M.C.;
"Exploring the Sialome of the Tio" "scapularis.";
                                                                                                                                                                                                                                                                                                      01-DEC-2001 (TremBLrel. 19, 01-DEC-2001 (TremBLrel. 19, 01-OCT-2002 (TremBLrel. 22, Histamine binding protein.
                                                                                                                                          SEQUENCE
                                                                                                                                                                                                                                                       Ixodes scapularis (Black-legged tick) (Deer tick).
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari;
Parasitiformes; Ixodida; Ixodidae; Ixodes.
                                                                                                                                                                                                                                                                                              HBP.
                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                      Q95WZ5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (FEB-2002) to the EMBL/GenBank/DDBJ databases EMBL; AF483718; AAM93640.1; -.
                                                                                                                                                                                                   Fikrig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                        immunodominant antigens in engorged 
7. Infect. Dis. 184:0-0(2001). 
EMBL; AF209913; AAK97816.1; -. 
SEQUENCE 221 AA; 25359 MW; 7B995
                                                                                                                                                                                                                                                 NCBI_TaxID=6945;
                                                                                                                                                                                       Salp25D,
                                                                                                                                                                                                                                                                                                                                                                                        σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          119
                                                                                                                                                                                                                                                                                                                                                                                                                            298
                                                                                                                                                                                                                                                                                                                                                                                                                                                 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       178
 81
                       61
                                              31
                                                                     10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  12 VSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSW
                                                                                            l Similarity
49; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            59;
                                                                                                                                                                                                              Banerjee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
 WRTYD-VTDFSGNPVQCENFRVMEKR---
                                            TYGSTGTTTRPGTRGARMIVTTAPPEEDP
                                                                                                                                                                                                                                                                                                                                                                                                                            Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GSQ-----FKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYN------VTETVKAVF 118
                     KTTYENDTGSWGSQFKCLQVQEIERKEEDYTVTSV-FTFRNASSPIKYYNVTET--VKAV
                                                                    TFVSAALATQAET----TSAKAGENPLWAHEELLGKY--QDAWKSIDQGVSVTYVLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q--YGYKNIR------NAIEYQV-----GGGLNI----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VSAAYAEVEFQSWDRAPDNNPDLNRKDLGAMQDAWRTIKFTANHSYYLIYSS-----GW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SYERKESVQCEEEPRTANKTTFLYDLLFKELPSSCRYAFLLNCGYPKYRIYDKKDCDKIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LFSTPLCYVVRSLQDDEGYESCEFWLSEDWLKKNVTIPQVVTILEKEDSDEIEKSEEREE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FTDGELCDVFYVPNADQG---CELW-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QKYYSIENIMHLGQPQREVTSPNGTCYNLNFNFLCESGGCRIHHQECWQKRWTKYSEKYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GTREHYEDVRCLQVHSSDLN------YTLXSANYTSKWYNRTSKRMNSSTQYVQAAK 117
                                                                                                                                                                       an Ixodes scapularis antioxidant, is one of 14 inant antigens in engorged tick salivary glands
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          311 AA;
                                                                                            llarity 23.4%; P
Conservative 43;
                                                                                                                                                                                                                                                                                                                                                                  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                             G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        36581 MW;
                                                                                                                                                                                                             DePonte K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           35;
                                                                                         Score 97.5; D
Pred. No. 0.89
13; Mismatches
                                                                                                                                                                                                                                                                                                                  Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                          Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      D7E529FEFE4CFA9A CRC64;
                                                                                                                                         7B995AC9C0AFA252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                             Marcantonio N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   No. 0.45;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             YKHVPDYCTFVFNVFCA-----KDRKTYDIFN
                                                                                                                                                                                                                                                                                                                                                                 221
-TPTNYSFQYRYKSKN-SWETIDETLILKDI
                                                                                                      . 89;
                                                                                                                                                                                                                                                                                                                                                                 A
                                                                                                               DB 5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               5;
                                                                                            80;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Lyme
                                            -SKYKEQNATRVVE--MNATQWVK
                                                                                                                                         CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Garfield
                                                                                                               Length 221;
                                                                                                                                                                                                             Kantor F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Disease,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -----TDTLI 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Σ.
                                                                                                                                                                                                             'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           128;
                                                                                            37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VKKSH----
                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                            80
                     117
                                                                    60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    71
```

```
RESULT QE LONG RESULT OF R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 뭉
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
Matches 4
                                                                                                                                                                                                                                                                                                             Q939L2
Q939L2;
Q1-DEC-2001
01-DEC-2001
01-DEC-2001
STRAIN=MB4-8242;
MEDLINE-21425731; PubMed-11534764;
MEDLINE-21425731; PubMed-11534764;
Kang J.W., Jeong Y.J., Kwon A.R., Yun H.J., Kim D.H., Choi E.C.;
"Cloning, sequence analysis, and characterization of the astA gene
"Cloning, sequence analysis, and characterization of the astA gene
encoding an aryisulfate sulfotransferase from Citrobacter freundii.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q8IDR7;
Q8IDR7;
01-MAR-2003
                                                                                                                                                                     Enterobacteriaceae;
NCBI_TaxID=546;
                                                                                                                                                                                                                                                                  Arylsulfate ASTA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Harris B., Lennard N., Clark L., Line A., Barron A., Corton Berriman M., Pain A., Hall N., Atkin R., Chillingworth C., D Ormond D., Sanders M., Hayes R., Hall S., Quail M., Barrell Submitted (SEP-2002) to the EMBL/GenBank/DDBJ databases. EMBL; AL844509; CAD52552.1; -. Hypothetical protein. SEQUENCE 972 AA; 119242 MW; 70471A60C0327C32 CRC64;
                                                                                                                            SEQUENCE FROM
                                                                                                                                                                                                                       Bacteria;
                                                                                                                                                                                                                                          Citrobacter freundii.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Plasmodium falciparum 
Eukaryota; Alveolata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hypothetical protein. PF13_0230.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NCBI_TaxID=36329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   l Similarity
43; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KSHYKHVPDYCTFVFNVFCAKDRKTYDIFNEECVYNG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KICLLFIYISCSIVSQTYKHIMKKENN------VEKKRKKMKSLDNFIIKNINECKHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QVVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGV-----SVTYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KAVFQ--YGYKN---IRNAIEYQVGGGLNITDTLIFTDGELCD-VFYVPNADQGCELWVK 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LMDNLIN------KCINDQYIRYIILRRKYCSTYLNINVLKKYLNSIKYLNIINIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LAKTTYENDTGSWGSQFKCLQVQEIE----RKEEDYTVTSVFTFRNASSPIKYYNVTETV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QETPDDCLNKFFEYC-NTTQIYRVYYPSC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KSFYYICYLYYNSYIFNKSIYY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       KHVPDYCTFVFNVFCAKDRKTYDIFNEEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GEHGFPNVMNFQRTPIG---IATDNLVLYSNYVNCTVLRIPFTNQGERHCDLWMANLTLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FQYGYKNIRNAIEYQVGGGLNITDTLI-FTDGELCDVFYVPNADQG----CELWVKK-SHY
                                                                                                                                                                                               Proteobacteria; Gammaproteobacteria; teriaceae; Citrobacter.
                                                                                                                                                                                                                                                                                                           1 (TrEMBLrel. 19,
1 (TrEMBLrel. 19,
1 (TrEMBLrel. 19,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3 (TrEMBLrel.
3 (TrEMBLrel.
                                                                                                                                                                                                                                                                                          sulfotransferase.
                                                                                                                                                                                                                                                                                                                                                                                                           PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Apicomplexa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (isolate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     23,
23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 89; DB Pred. No. 35; Mismatches
                                                                                                                                                                                                                                                                                                                  Last
                                                                                                                                                                                                                                                                                                                                     Last
                                                                                                                                                                                                                                                                                                                                                                Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Last sequence u
Last annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3D7).
exa; Haemosporida;
                                                                                                                                                                                                                                                                                                                  annotation
                                                                                                                                                                                                                                                                                                                                     sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                           598
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              972
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    . 35;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          201
                                                                                                                                                                                                                                                                                                                                                                                                           Ã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ₿
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5.
                                                                                                                                                                                                                                                                                                                update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   81;
                                                                                                                                                                                                                       Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 972;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -CSLIFYL-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Doggett
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               c.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LOKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     172
```

```
QRESULT
QRESUL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORNESULT
OCC DIT OCC D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Ma
Best Loc
Matches
    Query Match
                                                                                  EMBL; AF4
SEQUENCE
                                                                                                                                                                                                  SEQUENCE FROM N.A.
STRAIN-Rhode Island; TISSUE-Salivary
Valenzuela J.G., Francischetti I.M.,
Mather T.N., Ribeiro J.M.C.;
"Exploring the Stalome of the Tick Ve
scapularis.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-OCT-2002 (TrEMBLrel. 22, Created)
01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
putative secreted histamine binding protein.
Ixodes scapularis (Black-legged tick) (Deer tick).
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachn:
Parasitiformes; Ixodida; Ixodidae; Ixodes.
NCBI_TaxID-6945;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRAIN-Rhode Island; TISSUE-Salivary gland; Valenzuela J.G., Francischetti I.M., Pham V.M., Mather T.N., Ribeiro J.M.C.; "Exploring the Sialome of the Tick Vector of Lym scapularis.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  OBMV98 PRELIMINARY; PRT; 210.AA.

OBMV98;
01-OCT-2002 (TrEMBLrel. 22, Created)
01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update
putative 22.5 kDa secreted protein.
Ixodes scapularis (Black-legged tick) (Deer tick).
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arach
Parasitiformes; Ixodida; Ixodidae; Ixodes.
                                                                                                                        Submitted (FEB-2002)
EMBL; AF483717; AAM93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted (FEB-2002)
EMBL; AF483742; AAM93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QBMVC3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QBMVC3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=6945;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LDDGVPRECESVYGIACGKDEPSY----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HYKHVPDYCTFVFNVFCAKDRKTYDIFNEECVYNGEPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TEMHATQRQNNNAMRVSQKKDAQDGKGYQLIYSDYNKCDILRVLRENSGHDCELYLHSKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NIRNAIEYQVGGGLNITD-----TLIFTDGELCDVFYV--PNADQGCELWV-KKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NDTGSWGSQFKCL--QVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGYK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VMHFSFLLCLLAILVD---AKPGEIRI-DEDEKYWQYQDIQRALNNPDRESWLYYR-TYR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  VLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FVFNVFCAKDRKTYDIFNEECVYNGEPWL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FVFNVFCAKDRKTYDIFNEECVYNGEPWL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RETD -- GSEHICVSAKVSENQPNGSDYEFVQEYRLGT ---- KEQNTRKTV-TLYATPYK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               210 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRELIMINARY;
                                                                                  Ã,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2002) to the EMBL/GenBank/DDBJ AAM93664.1; -.
                                                                                                                    AAM93639.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   24689
                                                                                       34232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11.28;
        10.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WW;
                                                                                  Œ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          41;
                                                                                                                    EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 126;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred.
        Score 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                  B2DB09181CC4395D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C5B75614649A9BED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                        Vector of
                                                                                                                                                                                                                                                                                                                       gland;
Pham V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KQRVY--YPW
    ŗ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 5;
                                                                                                                                                                                                                                                                                                                  V.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ₹
    DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    update)
                                                                                                                                                                                                                                        Lyme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Lyme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Arachnida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Arachnida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          90;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              databases
    5
                                                                                                                                                                 databases
                                                                                                                                                                                                                                                                                                                       Garfield
                                                                                  CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Garfield
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
Length
                                                                                                                                                                                                                                            Disease,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Disease,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Acari;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .
.
                                                                                                                                                                                                                                                                                                                       X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT OF THE PROPERTY OF THE 
    RESULT
Q8MVC2
AC Q0
DT Q0
DT Q0
DT Q0
DT Q0
OC D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Lo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q8I9T9;
01-MAR-2003
01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                     Q8MVC2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ornithodoros
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q819T9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              76
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
```

```
OBMVC2;
Ol-OCT-2002 (TrEMBLrel. 22, Created)
Ol-OCT-2002 (TrEMBLrel. 22, Last sequence update)
Ol-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Ol-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Putative secreted histamine binding protein.
Ixodes scapularis (Black-legged tick) (Deer tick).
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachni
Parasitiformes; Ixodida; Ixodidae; Ixodes.
NCBI_TaxID-6945;
[1]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TISSUE-Salivary gland;
TISSUE-Salivary gland;
MEDLINE-21317941; PubMed-11425229;
Mans B.J., Venter J.D., Vrey P.J., Lo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  tick salivary glands.",
Electrophoresis 22:1739-1746(2001).
EMBL; AF452891; ANN76831.1; -
SEQUENCE 176 AA; 19375 MW; 44B7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Metazoa;
Parasitiformes; Ixo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=69826;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
30; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity 20.0
                                                                                                                                                                                                                                                   LQMKTSPFPGKCELWAPEGKAKNVESSCSGKFKELC
                                                                                                                                                                                                                                                                                                                                              PIKY----YNVTETVKAVFQYGYKNIR----NAIEYQVGGGLNITDTLIFTDGELCDV
                                                                                                                                                                                                                                                                                                                                                                                                                  DAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KDAVGSEAGSAEPVEGVNYLDFYVVHNQPHCNILRSPLLKGGCDFWLRKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MKMQVVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLA
                                                                                                                                                                                                                                                                                  FYVPNA--DQGCELWVKKSHYKHVPDYCTFVFNVFC
                                                                                                                                                                                                                                                                                                                   TTDFVEPSKYTVTATSEGASTYNMMTVRRGPASHGVKFE--
                                                                                                                                                                                                                                                                                                                                                                                    DVW-NVLKGSDSKFLMVKRTYERGAN-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RNAIEYQVGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENVIRAGLKGTPSDKPTPLGSNMYIEYGDYSCNTSSKPL----TDMLKAA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FRSRNHEPNITCVVVTASLHNETLKIVNFTRTYYNET---DGKNDTLEYQVRALNQTDYK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MGLMYAALFACIASASAWQAQMTIRNPENNPL-LNEPSLGPLQSAWKAINKSKDDPFVLM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (TrEMBLrel.
(TrEMBLrel.
(TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                savignyi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ixodida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                              9.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Arthropoda; Chelicerata;
dida; Argasidae; Ornithodo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      20.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GLNITDTLIFTDGELCDVFYVPNADQGCELWVKKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                 33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Created)
Last seq
Last ann
                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No. 0.03
3; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No. 0.0:
4; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 111.5;
Pred. No. 0.
                                                                                                                                                                   PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    44B7559F3BCB6A25 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sequence update)
annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MuoT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ornithodoros
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ouw A.I.,
involved
                                                                                                                                                                   311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -KTTYENDTGSWGSQFKCLQVQEIERKEEDYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ·FTFRNASSPIKYYNVTETVKAVFQYGYKNI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .038;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .023;
                                                                                                                                                                   ₹
                                                                                                                                                                                                                                                                                                                                                                                   KCVYMKRTSMDESSHTLEVLMGYSKAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BG
                                                                                                update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Arachnida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        73;
                                                  Arachnida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Neitz
in gra
                                                                                                                                                                                                                                                   161
                                                                                                                                                                                                                                                                                    187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    granule
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A.W.;
                                                   Acari;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Acari;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  biogenesis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     176;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      170
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       of.
                                                                                                                                                                                                                                                                                                                                                  153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      59
                                                                                                                                                                                                                                                                                                                                                                                   75
                                                                                                                                                                                                                                                                                                                                                                                                                   103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       91
```

```
Title:
Perfect score:
                                                                                                                                                                                                                    Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OM protein - protein search, using sw model
                                                                                                                                                                                                         8
                                                                                                                                                                                                                                                                Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
             1125
117.5
1117.5
1111.3
97.5
89
86.5
85.5
85.5
85.5
                                                                                                                                                                                                        Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SPTREMBL_23:*
1: sp_archea:*
2: sp_bacteria
3: sp_fungi:*
  100.0
111.2
10.4
9.9
9.2
7.7
7.7
7.6
7.6
7.6
7.6
7.6
                                                                                                                                                                                                       Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   830525 seqs, 258052604 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DRET6
1125
1 MKMQVVLLLTFVSAALATQA.....DRKTYDIFNEECVYNGEPWL 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       August 4, 2003, 17:13:11; Search time 95 Seconds (without alignments) 567.716 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sp_archea:*
sp_bacteria:*
                                                                                                                                                                                                                                                                                                                                                                                                           sp_phage:*
                                                                                                                                                                                                                                                                                                                                                                                                                        sp_organelle:*
                                                                                                                                                                                                                                                                                                                                                                                                                                  sp_mhc:*
                                                                                                                                                                                                                                                                                                                                                                                                                                              sp_mammal:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                         sp_invertebrate:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sp_human:*
                                                                                                                                                                                                                                                                                                                sp_bacteriap:*
sp_archeap:*
                                                                                                                                                                                                                                                                                                                                     sp_vertebrate:*
sp_unclassified:*
sp_rvirus:*
                                                                                                                                                                                                                                                                                                                                                                                    sp_plant:*
sp_rodent:*
                                                                                                                                                                                                                                                                                                                                                                         sp_virus:*
                                                                                                                                                                                                        Length
                                                                                                                                                                                                         DB
   10
17
12
                                      5 Q92N47
5 Q8XMD0
Q51717
Q33983
Q8IC77
0 Q9SQX6
7 Q8ZWE9
                                                                                              Q8WSK7
Q8MV98
Q8MVC3
Q819T9
Q819T9
Q8MVC2
Q95WZ5
Q81DR7
Q839L2
                                                                                                                                                                                                        Ħ
                                                                                                                                                                                                                                           SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           830525
                                OBwsk7 dermacentor
OBmv98 ixodes scap
OBmv98 ixodes scap
OBmv2 ixodes scap
OBi919 ornithodoro
OBmvc2 ixodes scap
O95wz5 ixodes scap
O95wz5 ixodes scap
O95wz5 ixodes scap
O95wz7 plasmodium
O93912 citrobacter
O92n47 rhizobium m
O82n47 rhizobium m
O831717 pseudomonas
O33983 listeria mo
O81c77 plasmodium
                                                                                                                                                                                                       Description
                        Q9sqx6
pyrobaculum
amsacta moo
```

44	42	41	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
79.5 79.5	80 80	81	81.5	82	82	82	82	82	82	82	82	82	82	82	83	83	83	83.5	83.5	83.5	84	84	84.5	84.5	84.5
7.1	7.1 7.1	7.2	7.2	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.4	7.4	7.4	7.4	7.4	7.4	7.5	7.5	7.5	7.5	7.5
267 310	262 3343	434	370	1604	1210	930	876	713	637	564	561	390	360	163	2285	2285	644	2879	1133	482	386	218	1801	917	917
16 17		16	2 2	N	ر.	N	տ	N	N	S	G	16	12	16	16	9	16	ۍ.	12	ഗ	13	ഗ	ഗ	16	ν
Q8R6U4 Q8TQ07	087818 091HK6	Q97TQ5	Q9S003	Q9KK99	Q8IAV1	Q59290	Q9W034	Q9JN39	Q937B8	Q95Y41	Q9N4D7	Q9PQU5	Q98544	Q97DZ8	031976	064046	Q8FN80	Q8IC57	Q8JRX7	002158	Q8AVY2	Q95WY8	Q8WSJ2	Q8Y496	050272
	н	Q97tq5 clostridium	ъ						Q937b8 pseudomonas	Q95y41 caenorhabdi	Q9n4d7 caenorhabdi		Q98544 paramecium			σ	0	D		002158 caenorhabdi	2 xenop		Q8wsj2 bombyx mori	Q8y496 listeria mo	O50272 listeria mo

ALIGNMENTS

Дy	ДУ	Db Db	Quer Best Matc	SQ		DR						Q (AC	Ħ	Q8WSK7	RESULT
121 GYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELWVKKSHYKHVPDYCT 180 	61 KTTYENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQY 120 	1 MKMQVVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLA 60 	Query Match 100.0%; Score 1125; DB 5; Length 209; Best Local Similarity 100.0%; Pred. No. 5.6e-92; Matches 209; Conservative 0; Mismatches 0; Indels 0; Gaps 0;	SEQUENCE 209 AA; 23889 MW; E5EB8BE710859591 CRC64;	InterPro; IPR002970; His_binding.	EMBL; AF217101; AAL56644.1;	Submitted (DEC-1999) to the EMBL/GenBank/DDBJ databases.	by blood-feeding ticks.";	"A high affinity serotonin- and histamine-binding lipocalin secreted	Sangamnadech S., Paesen G.C., Nuttall P.A.;	SEOUENCE FROM N.A.	raiasitituimes, ixodida; ixodidae; beimacentoi. NCBI TaxID=57047;	Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari;		(TrEMBLrel.	01-MAR-2002 (TrEMBLrel: 20; Created)		Q8WSK7 PRELIMINARY; % PRT; 209 AA.		ц

Search completed: August 4, 2003, 17:15:10 Job time : 25 secs

Page 10

```
RESULT 14

DNAK_R
ID K, MAK_R
ID K, MAK_R
AC Q9ZDX9
DT 30-MAY
DN Ricket
OC Bacter
CC Ricket
OC STRAIN
RA ANDERS
RT "The 9
RT "The 10
CC -!----
CC -!----
CC This S
CC -!- FU
CC -!- FU
CC -----
CC This S
CC -----
CC This S
CC -----
CC This S
CC -----
CC ------
CC ------
CC ------
CC ------
CC This S
CC -----
CC ------
CC -------
CC ------
CC -------
CC ------
CC -------
CC ------
CC -------
CC ------
CC -----
CC ------
CC --
     밁
                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                     Query Match
Best Local S
Matches 33
                                                                                                                                                                                                                                                                                                     HAMAP; ME_00332; -; 1.
InterPro; IPR001023; Hsp70.
Pfam; PF00012; Hsp70; 1.
PRINTS; PR00301; HEATSHOCK70.
ProDom; PD0000089; Hsp70; 1.
PROSITE; PS00297; HSP70_1; 1.
PROSITE; PS00329; HSP70_2; 1.
PROSITE; PS01036; HSP70_3; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE-99039499; PubMed-9823893;
Andersson S.G.E., Zomorodipour A., Andersson J.O.,
Sicheritz-Ponten T., Alsmark U.C.M., Podcwski R.M., Naeslund A.K.,
Eriksson A.-S., Winkler H.H., Kurland C.G.;
"The genome sequence of Rickettsia prowazekii and the origin of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL; AJ235270; CAA14651.1;
PIR; D71729; D71729.
HSSP; P04475; 1DG4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Nature 396:133-140(1998).
-!- FUNCTION: ACTS AS A CHAPERONE (BY SIMILARITY).
-!- INDUCTION: By stress conditions e.g. heat shock (By similarity).
-!- SIMILARITY: BELONGS TO THE HEAT SHOCK PROTEIN 70 FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rickettsia prowazekii.
Rickettsia; Proteobacteria; Alphaproteobacteria;
Bacteria; Proteobacteria; Alphaproteobacteria;
                                                                                                                                                                                                          SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
STRAIN-Madrid E;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 28-FEB-2003 (Rel. 41, Last annotation update) Chaperone protein dnaK (Heat shock protein 70)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           30-MAY-2000 (Rel.
28-FEB-2003 (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q9ZDX9;
30-MAY-2000
                                                                                                                                                                                                                                    Complete proteome.
MOD_RES 197
                                                                                                                                                                                                                                                                                   Chaperone;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Protein) (HSP70).
DNAK OR RP185.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNAK_RICPR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=782;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              210
     10
                                            72 GSQFKCLQVQE-----IERKEEDYTVTSVFTFRNA----SSPIKYYNVTETVKAVFQYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            81
                                                                                                                               Similarity
GTTNSCVAVMEGKEPKVIDNAEGERTTPSIIAFANSERLVGQPAKRQAVT--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TLIVDPDGKGLDSHWQKTAFALLVGVILHALYXAKDDGGTATLPSVDAMLADPNRDIG-E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DTLIFTDGELCDVFYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LWMEMATYGHV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LWVKKSHYKHV 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNIT
                                                                                                                                                                                                                                                                           ATP-binding; Heat shock; Phosphorylation;
                                                                                                                                                                                                          627 AA;
                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (Rel. 39, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -KGELWALTAGWRQKHAKNKVLRFEPASTSGGVCWNPLDEIRLGTEYEVGDVQNLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STANDARD;

    Last sequence update)
    Last annotation updat

                                                                                                                                                                                                                                  197
                                                                                                                       7.2%;
28.2%;
                                                                                                                                                                                                        68383 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           334
                                                                                                     15;
                                                                                                                            Score 81.5;
Pred. No. 12;
                                                                                                                                                                                                     PHOSPHORYLATION (AUTO-) (BY A638A0A5A5C8ACC7 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A
                                                                                                                                                    DB
                                                                                                  42;
                                                                                                                                                    ۲.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (Heat shock 70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Rickettsiales;
                                                                                                                                                 Length 627;
                                                                                                  Indels
                                                                                                                                                                                                                               SIMILARITY).
                                                                                                  27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -PNADQGCE 164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       kDa
                                                                                                Gaps
  59
                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          140
                                                                                                7;
                                                                Q
                                                                                                                       뮹
                                                                                                                                                                        Ş
                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                      QΥ
                                                                                                                                                                                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
```

```
HRESULDT
ID SC._DL
ID TO 011
DT 011
D
                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HS9C_DICDI
P54651;
01-OCT-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL; L43591; AAA69917.1; -.
HSSP; P07900; 1YER.
DictyDb; DD00051; hspD.
InterPro; IPR003594; ATDbind_ATPase.
InterPro; IPR001404; Hsp90.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SMART; SM00387; HATPase_c; 1. PROSITE; PS00298; HSP90; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRINTS; PR00775; HEATSHOCK90
SMART; SM00387; HATPase_c; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pfam; PF02518; HATPase_c; 1. Pfam; PF00183; HSP90; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       modified and this statement is not removed. entities requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Submitted (JUL-1995) to the EMBL/Ge-i- FUNCTION: MOLECULAR CHAPERONE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Dictyostelium discoideum (Slime mold).
Eukaryota; Mycetozoa; Dictyosteliida;
NCBI_TaxID=44689;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-OCT-1996 (Rel. 34,
01-OCT-1996 (Rel. 34,
15-DEC-1998 (Rel. 37,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -!- SIMILARITY: BELONGS TO THE HEAT SHOCK PROTEIN 90 FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Boves H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRAIN-AX3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Heat shock cog
HSPD OR HSC90.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (BY SIMILARITY)
                                                                                                                                                                       142
  368
                                                          191
                                                                                                                                                                                                                               248
                                                                                                                                                                                                                                                                                                                                               188
                                                                                                                                                                                                                                                                                                                                                                                                                                                         128 FYSAYLVADTVIVHSKNNDDEQYVWESSAGGEFTIALDHTEPLGRGTKIVLHMKEDQLDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122 YKNIRNAIEYQVGG--GLNITDTLIFTDGELCDVFYVPNADQGCELWVKKSHYKHVP
                                                                                                                                                                                                                                                                                    92
                                                                                                                                                                                                                                                                                                                                                                                                       43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               52;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FVSAALATQAETTSAKAG--ENPLWA----
RETLQQNKILTVIRKNLVKKCIELFNE
                                                                                                                                                                                                                                                                                    V---TSVFTFRNASSPIKYYNVTETVKAVFQYGYKNIRNAIE---
                                                                                                                                                                                                                                                                                                                                                                                                    QDAWK-----SIDQGVSVTYVLAKTTYENDTGSWGSQFKC-LQVQEIERKEEDYT
                                                                                                            ILFVPKKAPFDLFESKKKANNIKLYVKRVFIMDNCADIIPEYLNFVRGIVDSEDLPLNIS
                                                                                                                                                                    TLIFTDGELCDVFYVPNADQGCELWVKKSHYKH-----VPDYCTFVFNVFCAKD-----
                                                                                                                                                                                                                            VKVQEKEWDVLNKTKPLWTRNPSDVTKEEYNSFYKSISNDWEEPLAVKHFSVEGQLEFKA
                                                                                                                                                                                                                                                                                                                                            LDETKIKNLVKKHSEFIQYPISLLTIKEKEVDEETTAKEGEEESTDAKIEEIEEEKEKKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         --NPRNTI-YAVKRLIGRNFTDPMVRKDQGLVP-YNIVKADNG-DAWVEADNHKYSP 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Dittrich W., Mintert U., Lottspeich F., Gerisch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATP-binding; Heat shock 700 AA; 79881 MW; BFB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    cognate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          90 kDa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7.2%;
19.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            32;
                                                       -RKTYDIFNE 199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL/GenBank/DDBJ databases PERONE. HAS ATPASE ACTIVITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 81;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BFB5ECF238089CD3 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               update)
  394
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Dictyostelium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (See http://www.isb-sib
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 1;
15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         105;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ---HEELLGK---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and
                                                                                                                                                                                                                                                                                    --YQVGGGLNITD 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             <u>ه</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    176
                                                                                                                                                                                                                                                                                                                                                                                                                                                            187
                                                                                                                                                                                                                                                                                                                                            247
                                                                                                                                                                                                                                                                                                                                                                                                    91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    42
                                                                                                                                                                    190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
```

```
RESULT IN REPUBLIE OF THE PROPERTY OF THE PROP
Ş
                                             밁
                                                                          Qy
                                                                                                                                 밁
                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                    Query Match
Best Local
                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                  Metal 130
METAL 164
METAL 164
METAL 224
METAL 258
METAL 258
                                                                                                                                                                                                                                                                                                                       ACT_SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CAEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PIR;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the Exthe European Bioinformatics Institute. There are no restructe by non-profit institutions as long as its content use by non-profit institutions as long as its content modified and this statement is not removed. Usage by and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Caenorhabditis elegans.
Eukaryota; Metazoa; Nem
Rhabditidae; Peloderina
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-NOV-1995 (Rel. 32, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation updat
Ribonucleoside-diphosphate reductase small
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      <del>-</del> - - -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (Ribonucleotide reductase) RNR-2 OR C03C10.3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RIR2_CAEEL P42170;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WormPep; C03C10.3; CE00874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HSSP; P11157; 1XSM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Submitted (AUG-1994)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN-Bristol
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=6239;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-NOV-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 [nterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             an.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       mitted (AUG-1994) to the EMBL/GenBank/DDBJ databases.
FUNCTION: PROVIDES THE PRECURSORS NECESSARY FOR DNA SYNTHESIS.
CAPALYTIC ACTIVITY: 2'-deoxyribonucleoside diphosphate + oxidized thioredoxin + H(2)O = ribonucleoside diphosphate + reduced
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COFACTOR: BINDS 2 IRON IONS (BY SIMILARITY).
PATHWAY: DNA replication pathway; first step
SUBUNIT: Heterodiner of a large and a small chain.
SIMILARITY: BELONGS TO THE RIBONUCLEOSIDE DIPHOSPHATE REDUCTASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SMALL CHAIN FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; 235637; CAA84688.1;
T18876; T18876.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                124
                                               95
                                                                                        58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PF00268; ribonuc_red_sm; 1.
TE; PS00368; RIBORED_SMALL; 1.
reductase; DNA replication; Iron
                                                                                                                                   35
                                                                                                                                                                                 9
                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NLRNII-----GDLELDQTL--TSREMINTQLREVLDEATDKW 148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELW
                                               TVEEVDLGKDMNDW---
                                                                                      VLAKTTYENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPI-----KYYNV
                                                                                                                                      LEIVDQTKAASAEETNNESEVNELDADEPMLQDLDNRFVIFPLKHHDIWNFYKKAVASFW
                                                                                                                                                                                 LTFVSAALATQAETTSAKAGENPLWAHEELLG------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IPR000358; Ribonucl
                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Peloderinae;
                                                                                                                                                                                                                                                                                                                          ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STANDARD;
                                                                                                                                                                                                                                                                                                                                                                     161
164
224
258
                                                                                                                                                                                                                                                                                                                          44289 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nematoda; Chromadorea;
Inae; Caenorhabditis.
                                                                                                                                                                                                                                                    7.3%;
21.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Created)
                                                                                                                                                                                                                              20;
                                                                                                                                                                                                                            Score 82; DB
Pred. No. 5.9;
Pred. No. 5.9;
                                                                                                                                                                                                                                                                                                                                             IRON
IRON
IRON
IRON
BY SI
                                                                                                                                                                                                                                                                                                                                                                                                                                                             IRON
IRON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              _redctse.
                                                                                                                                                                                                                                                                                                                  IRÓN 1 (BY SIMILARITY).
IRÓN 1 (BY SIMILARITY).
IRÓN 1 (BY SIMILARITY).
IRÓN 2 (BY SIMILARITY).
IRÓN 2 (BY SIMILARITY).
IRÓN 2 (BY SIMILARITY).
BY SIMILARITY).
BY SIMILARITY).
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRT;
                                               EKMNGDEQYFISRILAFFAASDGIVNENLCERFSNE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    n update)
small chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    381
                                                                                                                                                                                                                                               DB
5.9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ₿
                                                                                                                                                                                                                                                                          ۲.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Rhabditida; Rhabditoidea;
                                                                                                                                                                                                                              56;
                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (E)
                                                                                                                                                                                                                              Indels
                                                                                                                                                                                 -KYQDAWKSIDQGVSVTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.17.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                166
                                                                                                                                                                                                                                                                          381;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a collaboration
                                                                                                                                                                                                                              28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     outstation
                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          50
                                                                                                                                   94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ₩ay
```

```
õ
                                                             δ
                                                                                                                                  RESULT 13
TRG5_ECOLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
밁
                                         밁
                                                                                      Matches
                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-FEB-1994
01-FEB-1994
28-FEB-2003
                                                                                                                                                                                                                                                                    use by non-profit institutions as long modified and this statement is not remove entitles requires a license agreement (see or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the Ew the European Bioinformatics Institute. There are no restr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "Nucleotide sequence and organization origin of promiscuous plasmid RP4."; DNA Seq. 1:303-327(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conjugal transfer protein
                                                                                                                                                                                                   Plasmid;
                                                                                                                                                                                                               EMBL; X54458; CAA38327.1; -.
EMBL; U67194; AAC64474.1; -.
InterPro: IPR003688; TRAG.
Pfam; PF02534; TRAG; 1.
                                                                                                                                                                                                                                                                                                                                                                  -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Submitted (AUG-1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Plasmid IncP-beta R751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             000184;
                                                                                                                                                       TRANSMEM
                                                                                                                                                                               TRANSMEM
                                                                                                                                                                                          DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                             ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A. Thomas C.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE-92190548; PubMed-1665997;
Ziegelin G., Pansegrau W., Strack
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NCBI_TaxID=562;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Enterobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Escherichia
                                                                                                                                  SEQUENCE
                                                                                                                                               DOMAIN
                                                                                                                                                                     DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Kruft V., Lanka
                                                                                                                                                                                                                                                                                                                                                                                                similarity).
SUBUNIT: May form multimers of at least 18 subunits
similarity).
                                                                                                                                                                                                                                                                                                                                                              SIMILARITY: BELONGS TO THE VIRD4/TRAG
                                                                                                                                                                                                                                                                                                                                                                                     SUBCELLULAR LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                              nitted (AUG-1996) to the EMBL/GenBank/DDBJ databases. FUNCTION: Required for conjugative transfert of plasmid R751. Binds tightly and specifically to the relaxase trai. Can also to DNA, without sequence specificity. May form a pore-like structure that could serve as a channel for DNA transfer (By
                                                                                                                                                                                                                                                                                                                                                                          (By similarity)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ECOLI
150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              145 VQVSEARFFYGFQ 157
                    38
                                          90
                                                                 u
                                                                                       46;
                                                                                                 Similarity
                                                                                                                                                                                                   Conjugation;
PTATGVYVGGWQDKDGNFFYLRHSGPEHVLTYAPTRSGKGVGLVVPTLLSWGASSVITDL
                                                                VVLLLTFVSAALATQAETTSAKAGE----NPLWAHEE--
                     --LLGKYQDAWKSID--
                                          LVSTVGLLGVAVAKVVTSNSSKANEYLHGSARWAEKKDIQAAGLLPRERNVLEIVTGKAA
                                                                                                                                  106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         coli.
                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N.A.
                                                                                                                                  ΑĄ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STANDARD;
                                                                                                                          22
43
84
105
637
69883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        28, Created)
28, Last sequence up
41, Last annotation
                                                                                                                                                                                                              TRAG.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Escherichia
                                                                                                                                                                                                                                                                                                        institutions as long
                                                                                                 18.3%;
                                                                                                                                                      DNA-binding; Transmembrane; Inner
CYTOPLASMIC (POTENTIAL).
POTENTIAL.
PERIPLASMIC (POTENTIAL).
POTENTIAL.
                                                                                                                                   ME.
                                                                                                                                                                                                                                                                                                                                                                                     Integral membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gammaproteobacteria;
                                                                                      30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Strack
                                                                                                                                                                                                                                                                                             is not removed.
                                                                                                 Pred.
                                                                                                                                  CYTOPLASMIC (POTENTIAL).
7B45A9A9020902FB CRC64;
                                                                                                           Score 82;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                     QGVSVTYVLAKTTYENDTG-----
                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      в.,
                                                                                                  ŏ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        on update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Balzer D.,
                                                                                                                                                                                                                                                                                 (See http://www.isb-sib.ch/announce/
                                                                                                          DΒ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      À
                                                                                                                                                                                                                                                                                                                                                              FAMILY.
                                                                                                                                                                                                                                                                                                        as its content
                                                                                                           1;
                                                                                                                                                                                                                                                                                                                                                                                     protein.
                                                                                                                                                                                                                                                                                             Usage
                                                                                      9;
                                                                                                           Length 637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                flanking the transfer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Enterobacteriales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kroeger
                                                                                      Indels
                                                                                                                                                                                                                                                                                             δq
                                                                                                                                                                                                                                                                                                                                                                                      Inner membrane
                                                                                                                                                                                                                                                                                                                 restrictions on 11
                                                                                                                                                                                                                                                                                              and
                                                                                                                                                                                                                                                                                                                                                                                                           (B)
                                                                                                                                                                                                    membrane.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .
                     SWGSQFKCLQV
                                                                                                                                                                                                                                                                                                          18
                                                                                                                                                                                                                                                                                                                                 a collaboration -
MBL outstation -
                                                                                      66;
                                                                                                                                                                                                                                                                                              ior
                                                                                                                                                                                                                                                                                                                                                                                                                                                       also
                                                                                      Gaps
                                                                                                                                                                                                                                                                                             n no way
                                                                                                                                                                                                                                                                                                                                                                                                                                                       bind
209
                     80
                                          149
                                                                 37
```

```
밁
                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 10
HTPG_RICPR
                                                                                                                                                                                           ALD DEPTH AND DEPTH OF THE PRINCIPLE OF 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                 Matches
                                                                                                                       Query Match
Best Local 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             30-MAY-2000 (Rel. 3
30-MAY-2000 (Rel. 3
28-FEB-2003 (Rel. 4
Chaperone protein h
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE-99039499; PubMed-9823893;
Andersson S.G.E., Zomorodipour A., Andersson J.O.,
Sicheritz-Ponten T., Alsmark U.C.M., Podowski R.M., Naeslund
Eriksson A.-S., Winkler H.H., Kurland C.G.;
"The genome sequence of Rickettsia prowazekii and the origin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        use by non-profit institutions as long modified and this statement is not removed. entitles requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mature 396:133-140(1998).
Nature 396:133-140(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Rickettsia prowazekii.
Rickettsia prowazekii.
Bacteria; Proteobacteria; Alphaproteobacteria; Rickettsiales;
                                                                                                                                                                                                                                                                  Chaperone;
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                              HAMAP; MF_00505; -; 1.
InterPro; IPR003594; ATPbind_ATPase.
InterPro; IPR001404; Hsp90.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A. STRAIN-Madrid E;
                                                                                                                                                                                           SEQUENCE
                                                                                                                                                                                                                                                                                                                                      SMART;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PIR; H71645; H71645.
HSSP; P02829; 1A4H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL; AJ235273; CAA15264.1;
                                                                                                                                                                                                                                       DOMAIN
                                                                                                                                                                                                                                                                                                              PROSITE;
                                                                                                                                                                                                                                                                                                                                                          PRINTS;
                                                                                                                                                                                                                                                                                                                                                                                                      Pfam; PF02518; HATPase_c; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein G).
HTPG OR RP840.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q9ZСВ9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HTPG_RICPR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          similarity).
SUBUNIT: Homodimer (By similarity).
SUBCELLULAR LOCATION: Cytoplasmic (By similarity).
SIMILARITY: BELONGS TO THE HEAT SHOCK PROTEIN 90 FAMILY.
    127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                101
                                                                                                                                                                                                                                                                                                                                                                                  PF00183; HSP90;
                                                   11
                                                                                                 Similarity
39; Conser
                                                                                                                                                                                                                                                                                                                                      SM00387;
                                                                                                                                                                                                                                                                                                                                                          PR00775;
                                                                                                                                                                                                                                                                                                         M00387; HATPase_c;
PS00298; HSP90; 1
YSSFMVADKVTVTSRKAGESKVHTWESDGLGEYIVADSEQEFTRGTEIVLYIKKSETTFL
                                              FVSAALATQAETTSAKAGENPLWAHE-ELLGKY--QDAWKSIDQGVSVTYVLAK--TTYE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IPSHAPFDLFNSDAKIGMQLYVKRVFIMSDCDQLMPMYLRFVKGVVDAED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SMKALWTKSKDEVSEDEYKEFYKHIAHAWDDPLEVIAMKAEGTFEYQ------ALLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TDGELCDVFYVPNADQGCELWVKKSHY - - - - - KHVPDYCTFVFNVFCAKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ASSPIKYYNVTETVKAVFQYGYKNIRNA--
                                                                                                                                                                                         329
545
621 AA;
                                                                                                                                                                                                                                                           ATP-binding; Heat shock; Complete proteome 1 328 A; SUBSTRATE-BINDING (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STANDARD;
                                                                                                                                                                                                                                                                                                                                                            HEATSHOCK90.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        39, Last sequence update)
41, Last annotation update)
htpG (Heat shock protein htpG)
                                                                                                                                                                                      621
70713
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    39, Created)
                                                                                                                  7.5%;
18.9%;
                                                                                                                                                                                           MW;
                                                                                                                                                                                                                                                                                                                                  ۲.
                                                                                               42;
                                                                                          Score 84.5; DB Pred. No. 6.4; 42; Mismatches
                                                                                                                                                                                                                 с.
В.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
                                                                                                                                                                                                                                       (BY
                                                                                                                                                                                         9F97B97801524007 CRC64;
                                                                                                                                                                                                                                     SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Has AffPase activity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ä
                                                                                                                                             DΒ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          as its content
                                                                                                                                        ۳.
                                                                                               88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Usage
                                                                                                                                        Length 621;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (High temperature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ру
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                - IEYQVGGGLNITDTLIF
                                                                                                                                                                                                                                                             SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           and for commercial
                                                                                               37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A.K.,
                                                                                            Gaps
    186
                                                65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Way
```

```
QY
                                                             В
                                                                                                                 Qy
                                                                                                                                                                                                                                                                                            ALD DEPTH OF THE PROPERTY OF T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 11
Y692_METTH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Вp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            뮻
                                                                                                                                                                              Query Match
Best Local S
Matches 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Y692_METTH
O26788;
30-MAY-2000
30-MAY-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Smith D.R., Doucette-Stamm L.A., Deloughery C., Lee H.-M., Dubois Aldredge T., Bashirzadeh R., Blakely D., Cook R., Gilbert K., Harrison D., Hoang L., Keagle P., Lumm W., Pothier B., Qiu D., Spadafora R., Vicare R., Wang Y., Wierzbowski J., Gibson R., Spadafora R., Vicare R., Wang Y., Wierzbowski J., Cibson R., Jiwani N., Caruso A., Bush D., Safer H., Patwell D., Prabhakar S., McDougall S., Shimer G., Goyal A., Pietrovski S., Church G.M., Daniels C.J., Mao J.-I., Rice P., Noelling J., Reeve J.N.; "Complete genome sequence of Methanobacterium thermoautotrophicum
                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                                              PROSITE; PS01270; BÄND_7; 1.
Hypothetical protein; Transmembrane; Complete proteome.
                                                                                                                                                                                                                                                                                                                                                                                                        SMART; SM00244; PHB;
                                                                                                                                                                                                                                                                                                                                                                                                                               PRINTS; PR00721; STOMATIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PIR; C69192; C69192.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            entities requires a license agreement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             the European Bioinformatics Institute.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                deltaH: functional analysis and comparative genomics.", J. Bacteriol. 179:7135-7155(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN=Delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Archaea; Euryarchaeota; Methanobacteria; Methanobacteriales; Methanobacteriaceae; Methanothermobacter.
                                                                                                                                                                                                                                                                                                                            TRANSMEM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro; IPR001107; Band_7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL; AE000848; AAB85197.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE=98037514; PubMed=9371463;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Methanobacterium thermoautotrophicum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -!- SIMILARITY: BELONGS TO THE BAND 7 / MEC-2 FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=187420;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   16-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pro; IPR001972; Stomatin. PF01145; Band_7; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
        65
                                                                  10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99
                                                                                                                       ű
                                                                                                                                                                                                     Similarity
                                                                  VLLVLAFKSLKILRPYEKGVV
        ENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIK-YYNVTETVKAVFQYGYK 123
                                                                                                                       VVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VFISDENIDLIPSYLRFLRGVVDSED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QYKEFYKSLSYAVDDPWVTLHNKNEGAIEFTNLLFIPSSKTFDLFH-PDRKKRVKLYIKR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GYKNIRNAIEYQVG------GGLNITDTLIFTDGELCDVFYVPNADQGCELWVKK 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DH-----FRLKHIVKSYSDHIAVPIYFCDEAGNNEIQLNSASALWTRPKSEITED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNV----TETVKAVFQY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ----SHYKHVPDYCTFVFNVFCAKD
                                                                                                                                                                                                                                                                                            318
                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (Rel. 39, Created)
(Rel. 39, Last sequence update)
(Rel. 40, Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein MTH692.
                                                                                                                                                                                                                                                                                            AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                                                                                            35425 MW;
                                                                                                                                                                                                           7.3%;
23.3%;
                                                                                                                                                                              23;
                                                                                                                                                                                                     Score 82.5;
Pred. No. 4.
                                                                                                                                                                                                                                                                                                                      POTENTIAL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                            4A72C0AC8E99278D CRC64;
                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             There are no
                                                                  -ERLGKYQ---RTVESGLVVIIPFIEAIK 55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A
                                                                                                                                                                                                                                  DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          as
                                                                                                                                                                           77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             its content
                                                                                                                                                                                                                                  Length
                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             restrictions on
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         and for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a collaboration -
                                                                                                                                                                              25;
                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   no
                                                                                                                       64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 236
                                                                                                                                                                                 6,
```

밁

56

KVD----MREQVVDVPPQEVITKDNTVVVVDCVIFYEVVDPFNAVYNVVDFYQAITKLAQT 112

```
$\times \text{T} \tex
                                                                                          밁
                                                                                                                                        Ş
                                                                                                                                                                                                밁
                                                                                                                                                                                                                                           ð
                             5
                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                              S
                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEROPS; C1
FlyBase; F
G0:000
G0; G0:000
G0; G0:000
G0; G0:000
G0; G0:000
G0; G0:000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL;
EMBL;
EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PROSITE; PS00972; UCH_2_1; PROSITE; PS00973; UCH_2_2; PROSITE; PS50235; UCH_2_3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VARSPLIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Developmental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Base; FBgn0005632; faf.
GO:0005737; C:cytoplasm; IDA.
GO:0005737; P:cellularization; IMP.
GO:0007949; P:cellularization; IMP.
GO:0009795; P:mbryonic morphogenesis; IMP.
GO:0008883; P:mystery cell fate differentiation (sensu Dr...
GO:0007097; P:nuclear migration; IMP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IsoId-P55824-3; Sequence-VSP_005269;
TISSUE SPECIFICITY: EYE DISKS AND OVARIES.
DEVELOPMENTAL STAGE: Expressed both maternaily and zygotically.
SIMILARITY: Belongs to peptidase family C19.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       conjugation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GO:0006512;
                                                168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AE003779; AAF57198.1; -. AE003779; AAN14291.1; -. AF145677; AAD38652.1; -. S; C19.007; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        L04959; AAF01345.1; -. L04958; AAF01346.1; -. L04960; AAF01347.1; -. L04960; AAF01348.1; -.
                                                                                                                                                                                                                                                   53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PF00443; UCH;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IsoId=P55824-2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  :0006512; P:ubiquitin cycle; ro; IPR001394; UCH-2.
                                                                                                                                                                                                                                                                                                                                                   6
                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
KRVCVKKLPPVLAIQLKRFEYDYERVCAIKFN------
                                                                                                                                                                                                LK---ALGQPQLMNATLGGSFSDQKICQECPHRYSKEEPFSVFSV-DIRNHSS-----L
                                                                                                                                                                                                                                           VSVTYVLAKTTYENDT - - GSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNV
                                                                                                                                                                                                                                                                                                                                                VLLLTFVSAALATQAETTSAKAGENPLWAHEELLG-----KYQDA------WKSIDQG
                                                KKSHYKHVP-----
                                                                                                                                                                                                                                                                                                      VVILKHVQAIFAHLGHSALQYYVPRGLWTHFKLLGEPVNLREQQDAVEFFMSLLESLDEG
                                                                                                                                                TETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDGEL----CDVFYVPNADQGCELWV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ration pathway: Hydroli

111 protein: Vision: J

1677 1677 BY

1978 1978 BY

1986 1986 BY

2705 2778 KCI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2742
                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    234
2725
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2778
                                                                                                                                                                                                                                                                                                                                                                                                                              7.68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              311139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence-VSP_005270;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                      28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              X.
                                                                                                                                                                                                                                                                                                                                                                                                                              Score 86; DB
Pred. No. 29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /FTIG-VSP_005269.
IATAATLEPAGMSELTTMVEKNLIISQENPQAKSSLQ
IATAATLEPAGMSELTTMVEKNLIISQENPQAKSSLQ
IATAATLEPAGMSELTTMVEKNLIISQENPQAKSSLQ
IATAATLEPAGMSELTTMVEKNLIISQENPQAKSSLQ
IATAATLEPAGMSELTI
IATAATLEPAGMSELTI
IATAATLEINING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               n; Alternative splicing.
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
KCRRVIIKKLVESKDEEDATTATTAATTEVTTSPATAIATA
ATLEPAGMSELTTMVEKNLIISQENPQAKSSLQ -> VTRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NNV (in isoform 3).
                                             DY --- CTFVFNVFCAKDRKTYDIFNEECVYNGEPW
                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FFB90438BA53A02B CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 D (IN REF. 1).
S (IN REF. 1; AAF01345).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IGI.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Thiol protease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 1;
                                                                                                YVKGELLEGADAYHCDKCDKKV-VTV
                                                                                                                                                                                                                                                                                                                                                                                                   72;
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 2778;
                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                      82;
                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
1942
                                                                                                1896
                                                                                                                                                167
                                                                                                                                                                                                1865
                                                                                                                                                                                                                                                110
                                                                                                                                                                                                                                                                                                      1815
```

```
RESULT 9

ITPG_MYCLE
ID MYCLE
ID 15-JUL
DT 16-PE
OC Bacter
OC STRAIN
RX MEDLIN
RX MEDLIN
RA MUTPhy
RA MUTPHY
RA MUTPHY
RA MUTPHY
RA MUTPHY
RA MUTPHY
RA MUTHER
CC -!- SU
CC -!- 
                                    Q
                                                                                               밁
                                                                                                                                         Qy
멍
                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                           Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE-21128732; PubMed-11234002;
Cole S.T., Eiglmeier K., Parkhill J., James K.D., Thomson N.R.,
Wheeler P.R., Honore N., Garnier T., Churcher C., Harris D.,
Mungall K., Basham D., Brown D., Chillingworth T., Connor R.,
Davies R.M., Devlin K., Duthoy S., Felttwell T., Fraser A., Hamlin N.
Holroyd S., Hornsby T., Jagels K., Lacroix C., Maclean J., Moule S.,
Murphy L., Oliver K., Quail M.A., Rajandream M.A., Rutherford K.M.,
Rutter S., Seeger K., Simon S., Simmonds M., Skelton J., Squares R.,
Squares S., Stevens K., Taylor K., Whitehead S., Woodward J.R.,
Barrell B.G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PIR; A87112; A87112.
HSSP; P07900; 1BYO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            15-JUL-1998
15-JUL-1998
28-FEB-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                              Chaperone;
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                           PRINTS; PR00775; HEATSHOCK90.
SMART; SM00387; HATPase_c; 1.
PROSITE; PS00298; HSP90; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HSSP; P07900; 1BYQ.
Leproma; M11623; -.
HAMAP; MF_00505; -; 1.
InterPro; IPR003594; ATPbin
InterPro; IPR001404; Hsp90.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "Massive gene decay in the leprosy Nature 409:1007-1011(2001).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              033012;
                                                                                                                                                                                                                                                                                                    SEQUENCE
                                                                                                                                                                                                                                                                                                                                                       DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pfam; PF02518; HATPase_c; 1. Pfam; PF00183; HSP90; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -i- SUBUNIT: Homodimer (By similarity).
-i- SUBCELLULAR LOCATION: Cytoplasmic (By similarity).
-i- SIMILARITY: BELONGS TO THE HEAT SHOCK PROTEIN 90 FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NCBI_TaxID=1769;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Corynebacterineae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bacteria; Actinobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mycobacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein G).
HTPG OR ML1623 OR MLCB250.19C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chaperone protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HTPG_MYCLE
                                                                                                                                                                                                                                                                                                                                 DOMAIN

    !- FUNCTION: Molecular chaperone.

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  similarity).
  194
                                                                                                 137
                                                  66
                                                                                                                                                 11
                                                                                                                                                                                                                           Similarity
                                                                                                                              FVSAALATQAETTSAKAGENPL--WAHEELLGKYQDAWKSID---QGVSVTYVLAKTTYE
  DELHDYTSEWKIRELVKKYSDFIAWPIRMEVERRAPATSDGEGADGEEQVTIETQTI--N
                                                                                                 YSSFMVANKVELLTRKAGETAATRWSSD----GEATYTIESVDEAPQGTSVTLHLKPEDFE
                                                  NDTGSWGSQFKCLQV-
                                                                                                                                                                                                                                                                                                                                                                            ATP-binding; Heat shock; Complete proteome
1 359 A; SUBSTRATE-BINDING (BY
                                                                                                                                                                                                                                                                                                    576
656 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (Rel. 36, Creace, (Rel. 36, Last sequence update) (Rel. 41, Last annotation update) (Rel. 41, Last annotation toggies)
                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Leprae.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              36, Created)
                                                                                                                                                                                                                                                                                                  575 B
656 C
73866 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        cteria; Actinobacteridae; Actinon
Mycobacteriaceae; Mycobacterium.
                                                                                                                                                                                                                             21.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATPbind_ATPase.
                                                                                                                                                                                                                                                7.68;
                                                                                                                                                                                                   38;
                                                                                                                                                                                              Score 85; DB
Pred. No. 6.2;
88; Mismatches
                                                                                                                                                                                                                                                                                                                            C B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRT;
                                                                                                                                                                                                                                                                                                                                                 (BY
                                                                                                                                                                                                                                                                                                    A526690CA66E03FF CRC64;
                                                                                                                                                                                                                                                                                                                                                       SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         bacillus.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Has ATPase activity
                                                  -QEIERK---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      656
                                                                                                                                                                                                                                                  DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ₿
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Actinomycetales;
                                                                                                                                                                                                   79;
                                                                                                                                                                                                                                                Length 656
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (High temperature
                                                                                                                                                                                                                                                                                                                                                                              (BY SIMILARITY).
                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (By
                                                  EEDYTVTSVFTFRN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hamlin N.,
                                                                                                                                                                                                   64;
                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                s.,
                                               100
  251
                                                                                                 193
                                                                                                                                                 65
```

```
AF_DROME

ID FAF_DROME

AC P55824; Q999T6; Q9Y0Z7;
DT 01-NOV-1997 (Rel. 35, Created)
DT 28-FEB-2003 (Rel. 41, Last sequence update)
DT 28-FEB-2003 (Rel. 41, Last annotation update)
DT Probable ubiquitin carboxyl-terminal hydrolase FAF (EC 3.1.2.15)
DE (Ubiquitin thiolesterase FAF) (Ubiquitin-specific processing proteas FAF) (Deubiquitinating enzyme FAF) (Fat facets protein).

GR FAF OR BCDMA:LDZ2582 OR CG1945.
OS Drosophila melanogaster (Fruit fly).
CC Eukaryota; Metazoa; Arthropoda; Harapoda; Insecta; Pterygota; Consoptera; Endopterygota; Diptera; Brachycera; Muscomorpha; Fnhydroidea; Drosophilidae; Drosophila.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
STRAIN-Berkeley;
STRAIN-Berkeley;
MEDLINE-20196006; PubMed-10731132;
Adams M.D., Celniker S.E., Holt R.A., Ev
Adams M.D., Scherer S.E., Li P.W.,
Amanatides P.G., Scherer S.E., Richards S., A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HSSP; P02829; 1AH8.
TIGR; TP0984; -.
HAMAP; MF_00505; -; 1.
InterPro; IPR003594; ATPbind_ATPase.
InterPro; IPR001404; Hsp90.
Pfam; PF02518; HATPase_C; 1.
                                                                                                                                      MEDLINE=93202020; PubMed=1295747;
Fischer-Vize J.A., Rubin G.M., Le
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; AE00126
PIR; F71258;
                                                                                                              development
                                                                                                                                                            TISSUE-Eye
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Chaperone;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SMART; SM00387; HATPase_c; PROSITE; PS00298; HSP90; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRINTS; PR00775; HEATSHOCK90.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pfam;
                                                                                                                         fat facets gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PF00183; HSP90;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AE001265;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           տ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQD-----AWKSIDQGVS
                                                                                                                                                                                                                                                                                                                                                                                                                               DYKPGVKLFVKRVFITDDEKELLPVYLRFVRGVIDSED 341
                                                                                                                                                                                                                                                                                                                                                                                                                                                      D--QGCELWVKK-----SHYKHVPDYCTFVFNVFCAKD 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDG--ELCDVFYVP-----NA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VTDTQKKVDQVNDAGALWKRPKS-----ELKEEDYHRFYQTLT-----RDSTPPLLYVH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VTYVLAKTTYENDTGSWGSQFKCLQVQEIERKEEDY-----TVTSVFTFRNASSPIKYYN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VVLHLSQENSEFATR------WRLEEVIKKYSDHIAFPIYLHYLQKEYDKDGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATP-binding; Heat shock;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 349
566
639 AA;
                                                                                                116:985-1000(1992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          F71258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAC65938.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 565
639
72937
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7.7%;
22.9%;
                                                                                                                          ìs
                                                                                                                         required
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    X
X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           C. B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 87;
                                                                                                                                      Lehmann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3E8FDBAC2282C31D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SUBSTRATE-BINDING (BY
                                                                                                                          for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SIMILARITY).
                                                                                                                         Drosophila
       Evans C.A., Gocayne J.D.,
., Hoskins R.A., Galle R.F.,
Ashburner M., Henderson S.N.,
                                                                                                                                      æ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ----AEGTQEYVTLFYVPAKAPFDLFHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                52;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 639
                                                                                                                         eye
                                                                                                                         and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SIMILARITY).
                                                                                                                         embryo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 90;
                                                                                                                                                                                                                                                                                       protease
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        54
```

```
RA Sutton G.G., Wortman J.R., Yandell M.D., Zhang Q., Chen L.X.,
RA Baradon R.C., Rogers Y.H.C., Blazej R.G., Champe M., Pfeiffer B.D.,
RA Wann K.H., Doyle C., Baxter E.G., Helt G., Nelson C.R., Miklos G.L.G.,
RA Abril J.F., Agbayani A., An H.-J., Andrews-Pfannkoch C., Baldwin D.,
RA Ballew R.M., Basu A., Baxendale J., Bayraktaroglu L., Beasley E.M.,
RA Beeson K.Y., Benos P.V., Bernan B.P., Bhandari D., Bolshakov S.,
RA Berkows D., Botchan M.R., Butler H., Cadieu E., Center A., Chandra I.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dahlke C., Davenport L.B., Davies P.,
RA Cherry J.M., Cawley S., Dehen M., Dietz S.M.,
RA Cherry J.M., Carge N.S., Gelbart W.M., Glasser K.,
RA Glodek A., Gong F., Gorrell J.H., Gu Z., Guan P., Harris M.,
RA Harris N.L., Harvey D., Heiman T.J., Hernandez J.R., Houck J.,
RA Kimmel B.E., Kodira C.D., Kraft C., Kravitz S., Kulp D., Lai Z.,
RA Kimmel B.E., Kodira C.D., Kraft C., Kravitz S., Kulp D., Lai Z.,
RA Kimmel B.E., Kodira C.D., Kraft C., Kravitz S., Kulp D., Lai Z.,
RA Mount S.M., My M., Murphy B., Murphy L., Muzny D.M., Nelson D.L.,
RA Melson D.R., Nelson K.A., Nixon K., Nusskern D.R., Pacleb J.M.,
RA Nelson D.R., Nelson K.A., Nixon K., Nusskern D.R., Pacleb J.M.,
RA Shue B.C., Siden-Kiamos I., Simpson M., Skupski M.P., Smith T.,
RA Shue B.C., Siden-Kiamos I., Simpson M., Skupski M.P., Smith T.,
RA Shue B.C., Siden-Kiamos I., Simpson M., Skupski M.P., Smith T.,
RA Shue B.C., Show M., Shupski M.P., Smith T.,
RA Walliams S.M., Woodage T., Worley K.C., Wu D., Yang S., Yao Q.A.,
RA Wall S., Pan S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Misra S., Crosby M.A., Mungall C.J., Matthews B.B., Campbell K.S., Hradecky P., Huang Y., Kaminker J.S., Millburn G.H., Prochnik S.E., Smith C.D., Tupy J.L., Whitfield E.J., Bayraktaroglu L., Berman B.P., Bettencourt B.R., Celniker S.E., de Grey A.D.N.J., Drysdale R.A., Harris N.L., Richter J., Russo S., Schroeder A.J., Shu S.Q., Stapleton M., Yamada C., Ashburner M., Gelbart W.M., Rubin G.M., Lewis S.E.;
                                                                                                                                                                                                                                                                                                                                                                                                            STRAIN-Berkeley;
MEDLINE-20196012; PubMed=10731138;
MEDLINE-20196012; PubMed=10731138;
                                                                                                           -
                                                                                                                                                     +
                                                                                                                                                                                                                                                                                                                                    "A Drosophila complementary DNA resource.";
Science 287:2222-2224(2000).
-i- FUNCTION: REQUIRED FOR EYE AND FMDDVO
                                                                                                                                                                                                                                                                                                                                                                                                   Rubin G.M., Hong L., Brokstein Stapleton M., Harvey D.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Annotation of the Drosophila melanogaster systematic review.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE OF 1089-2778 FROM N.A. (ISOFORM 1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=22426069; PubMed=12537572;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN=Berkeley;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REVISIONS,
                                                                                                                                                                                             FUNCTION: REQUIRED FOR EXE AND EMBRYO DEVELOPMENT, AND PLAYS A ROLE IN COMPOUND EYE ASSEMBLY AND GENESIS RESPECTIVELY. IN THE LARVAL EXE DISKS, CELLS OUTSIDE THE ASSEMBLING FACETS REQUIRE THIS PROTEIN FOR SHORT-RANGE CELL INTERACTIONS THAT PREVENT THE MYSTERY CELLS FROM BECOMING PHOTORECEPTORS. IT IS ALSO REQUIRED FOR NUCLEAR MIGRATION AND CELLULARIZATION IN EARLY EMBRYOGENESIS AND COULD PLAY A ROLE IN POLE CELL DETERMINATION, DEVELOPMENT OR
                                                                                                                                                   FUNCTION.
CATALYTIC ACTIVITY:
                                                                                                         ALTERNATIVE PRODUCTS:
                                                                                                                                ubiquitin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AND ALTERNATIVE SPLICING.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3:RESEARCH0083.1-RESEARCH0083.22(2002)
                                                                                                                                thiol
                                                                                                                                                     Ubiquitin C-terminal thiolester
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       euchromatic
                                                                                                                                                                                                                                                                                                                                                                                                                             .
.
                                                                                                                                                                                                                                                                                                                                                                                                                             Frise
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       genome: a
                                                                                                                                                       +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              H.O.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  K.A.,
```

Event=Alternative splicing; Comment=Experimental

confirmation

be

lacking

for

Named isoforms=3; may

IsoId=P55824-1;

Sequence=Displayed

```
THE RESERVE OF THE PROPERTY OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM THE PROPERTY OF 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          _BORBU
HTPG_BO
P42555;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  *Conservation of gene arrangement and an unusual organization of genes in the linear chromosomes of the Lyme disease spirochaetes Borrelia burgdorferi, B. garinii and B. afzelii.";
**Microbiology 140:2931-2940(1994).**
-I-FUNCTION: Molecular chaperone. Has ATPase activity (Bv similarity)
                                                                                                                                                                                                                                                                                                                                       the
                                                                                                                                                                                                                                                                                                                                                                                                           This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Borrelia burgdorferi (L. Bacteria: Spirochaetes; NCBI_TaxID=139;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Porcella S.F., Radolf J. Submitted (MAR-1996) to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein G).
HTPG OR BB0560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Chaperone protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Genomic sequence of a Lyme disease burgdorferi.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN-297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-NOV-1995 (Rel.
01-OCT-1996 (Rel.
28-FEB-2003 (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE OF 497-574 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Nature 390:580-586(1997).
[3]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE-95111614; PubMed-7812434;
                                                                                                                                                                                                       send
                                                                                                                                                                                                                                                                                                                                   s SWISS-PROT entry is copyright. It is produced through a collaboration ween the Swiss Institute of Bioinformatics and the EMBL outstation - European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SUBUNIT: Homodimer (B
SUBCELLULAR LOCATION:
SIMILARITY: BELONGS T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BORBU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183
AE001157; AAC66919.1;
L32145; AAC41403.1; --
P07900; 1YER.
BB0560; --
                                                                                                                                   U51878; AAA97469.1; -.
                                                                                                                                                                                                non-profit institutions as long d and this statement is not removed. s requires a license agreement (See an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         YKEFYKSLSYAIDDPWITMHNKNEGAIEFTNLLFIPSSKTFDLFH-PDRKRRVKLYIKRV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DT--FLDHFR---LKHIVKSYSDHIAVPIYFFDEAGNNEIQLNSASALWTRPKSEITEEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FISDENIDLIPSYLRFLRGVVDSED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ----SHYKHVPDYCTFVFNVFCAKD 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FQYGYKNIRNAIE-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   32, c
34, I
41, I
htpg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (Lyme disease spirochete). es; Spirochaetaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Last sequence update)
Last annotation update)
G (Heat shock protein htpG) (High temperature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (By similarity).
ON: Cytoplasmic (By
S TO THE HEAT SHOCK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            the
                                                                                                   ALT_INIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Norgard M.V.;
EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -YQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELWVKK-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             spirochaete,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              616
                                                                                                                                                                                                                                   (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                            There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       similarity).
PROTEIN 90 FAMILY.
                                                                                                                                                                                                                                                                       Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Borrelia
                                                                                                                                                                                                                                                                       γď
                                                                                                                                                                                                                                                                          and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Borrelia
                                                                                                                                                                                                                                                                          for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gwinn M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                237
```

```
HTPG_TREPA
AC 083949
AC 083949
DT 15-DEC
DT 15-DEC
DT 28-FEB
DE Chaper
DE PARTHER
ON TREPON
OC BACTER
ON NCBI_T
RN (1)
RP SEQUEN
RC STRAIN
RX Fraser
RA Dodson
RA Fraser
RA Dodson
RA Wenter
RA McDone
RA Wenter
RA Dodson
RA Compl
RT "Compl
RT "Compl
RT Scienc
CC -!- SC
CC -!- SC
CC -!- SC
CC This !
CC the E
CC use |
CC use |
CC use |
CC modif
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ő
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DR SQ SQ SQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HTPG_TREPA
083949;
15-DEC-1998 (
15-DEC-1998 (
28-FEB-2003 (
                                                                                                                                                           "Complete genome sequence of Trepor spirochete."; Science 281:375-388(1998).
-1- FUNCTION: Molecular chaperone.
This SWISS-PROT entry is copyright. It is produced through a collat between the Swiss institute of Bioinformatics and the EMBL outst the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for commodified and this statement is not removed.
                                                                                                                                                                                                                                                MEDLINE-98332770; PubMed-9665876;
Fraser C.M., Norris S.J., Weinstock G.M., White O., Sutton G.G. Dodson R., Gwinn M., Hickey E.K., Clayton R., Ketchum K.A., Sodergren E., Hardham J.M., McLeod M.P., Salzberg S., Peterson Sodergren E., Hardham J.M., McLeod M.P., Salzberg S., Peterson Khalak H., Richardson D., Howell J.K., Chidambaram M., Utterbac Khalak H., Artiach P., Bowman C., Cotton M.D., Fujii C., Garl Match B., Horst K., Roberts K., Sandusky M., Weidman J., Smith
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRINTS; PR00775; HEATSHOCK90
SMART; SM00387; HATPASS C. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro; IPR003594; ATPb1r InterPro; IPR001404; Hsp90 Pfam; PF02518; HATPase_c; 1 Pfam; PF00183; HSP90; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Chaperone;
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                       STRAIN-Nichols;
                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                       Treponema pallidum.
Bacteria; Spirochaetes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HTPG OR TP0984
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein G)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chaperone protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PROSITE; PS00298;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HAMAP; MF_00505;
                                                                                                                                                                                                                                      Venter J.C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                        similarity).
SUBUNIT: Homodimer (By similarity).
SUBCELLULAR LOCATION: Cytoplasmic (By similarity).
SUBCELLULAR EDCATION: THE HEAT SHOCK PROTEIN 90 FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            293
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SM00387; HATPase_c;
E; PS00298; HSP90; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 Similarity
46; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GVKLFINRIFITDSEGSLLPNYLRFIKGIIDCQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FVSAALATO-AETTSAKAGENP--LWAHEELLGKYODAWKSIDOGVSVTYVLAKTTYEND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCELWVKK-----SHYKHVPDYCTFVFNVFCAKD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KSEIKAEEYNEFYKNT-TFDYENPLMHIHTKAEGNLEYTNLFYVPSKAPYDLYY-PNTKP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ---YANKWKIQEIIKKYSNHINYPIYIKYSEPIMKDGKQEGIEEKEEKLNETTALWTKN-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGSWGSQFKCLQV-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FYSAFIVSEKVEVTSKKALESDAYIWSSDGKTGYEIEKAKKEESGTEIKLYLNKEGLE--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATP-binding; Heat shock; Complete proteome
1 333 A; SUBSTRATE-BINDING (BY
334 542 B (BY SIMILARITY).
543 616 C.
616 AA; 71218 MW; D676552F48DBEE84 CRC64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (Rel. 37, Created)
(Rel. 37, Last sequence update)
(Rel. 41, Last annotation update)
rotein htpG (Heat shock protein ht
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8.5%;
21.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATPbind_ATPase.
                                                                                                                                                                                                                                                                                                                                                                                                                                       Spirochaetales;
                                                                                                                                                                                                                    of Treponema
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 96; DB
Pred. No. 0.61
84; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              D676552F48DBEE84 CRC64;
                                                                                                                                                                   Has
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          639
                                                                                                                                                                   ATPase
                                                                                                                                                                                                                    pallidum,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                     Spirochaetaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      htpG)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----QEIERKEEDYTVTSVFTFRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              92;
                                                                                                                                                                   activity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 61
                                                                                                                                                                                                                    the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (High
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                      Sutton G.G.,
                                                                                                                                                                                                                    syphilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIMILARITY).
                                                                                                                                                                                                                                                                                Peterson J.
Utterback
                                                                                                                                                                   (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        temperature
                                                                                                                                                                                                                                                     Garland
mith H.O.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              42;
                                                collaboration -
                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           234
```

5

Way

```
NUGC_MESVI
ID NUGC_MA
AC OSMURAL
AC OSMURAL
DT 16-OCT
DT 28-FEB
DE NAD(P)
DE SUDDN(P)
DE S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOST
  Best Local Similarity
                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DISULFID
DISULFID
SEQUENCE
                                                                                                                                                                                                                                                                                                the European Bioinformatics Institute. The use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=20150907; PubMed=10688199;
Lemieux C., Otis C., Turmel M.;
Pancestral chloroplast genome in Mesostigma viride branch of green plant evolution.";
Nature 403:649-652(2000).
-i- CATALYTIC ACTIVITY: NAD(P)H + plastoquinone = N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                16-OCT-2001 (Rel. 40, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
NAD(P)H-quinone oxidoreductase chain J, chloroplast (EC 1.6.5.-)
(NAD(P)H dehydrogenase, chain J) (NADH-plastoquinone oxidoreductase
                                                                                                                                                                                                                                                            entities requires a license agreement (See http://www.isb-sib.or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                       This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota; Viridiplantae; Streptophyta; Mesostigmatophyceae; Mesostigmatales; Mesostigmataceae; Mesostigma.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q9MUR1;
16-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CHAIN
                                                                                              Oxidoreductase; NAD;
                                                                                                             ProDom; PD001581; Complex1_30K; 1. PROSITE; PS00542; COMPLEX1_30K; 1.
                                                                                                                                                                                                              EMBL; AF166114; AAF43839.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Chloroplast.
                                                                                                                                                                  Pfam; PF00329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=41882;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mesostigma viride.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      subunit J).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NUGC_MESVI
                                                                                                                                                                                          interPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  SIMILARITY: BELONGS TO THE COMPLEX I 30 kDa SUBUNIT FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 plastoquinol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LEKFNEYAA-GLPVRDVYTSDCL 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGY 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TFVFNVFCAKDRKTYDIFNEECV 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KNIRNAI EYQVGGGLNITDTLIFTDGELCDVFYVPNAD - - - QGCELWVKKSHYKHVPDYC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYKNDP-VWGNDFTCVGTAAQNLNEDEKNVEAWFMFMNNADTV-YQHTFEKATPDKMYGY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MQVVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MKLLLSLAFVLALSQVKA------DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKA
                                                                                                                                                                IPR001268; Complex1_30K.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -NKENAITYQTEDGQVLTDVLAFSD-DNCYVIYALGPDGSGAGYELWA--TDYTDVPASC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     66
137
190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (Rel. 40, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AA;
                                                                      Ã,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       187
166
21370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   190
                                                                      20329 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22.4%;
                                                                                              NADP;
  27
.78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAD(P)H + plastoquinone = NAD(P)(+)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ₹
                                                                   Quinone; Plastoquinone; Chl.
MW; 122ABFA9188D47B7 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                28;
Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 252;
Pred. No. 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ву
ву
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEMALE-SPECIFIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       855BE151A90053B1 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
97.5;
No. 0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    174
                                                                                                                                                                                                                                                                                                                         There are no restrictions ong as its content is in
  . DВ
, 097;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 1;
.2e-15;
                                                                                                                                                                                                                                                                                                        Usage
                     1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HISTAMINE-BINDING PROTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 190
                     Length 174;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                         Chloroplast.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      reveals
                                                                                                                                                                                                                                                                                                            and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           18;
                                                                                                                                                                                                                                                                                                            for
                                                                                                                                                                                                                                                                                    .ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                  no
                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62
```

```
Qy
                                                                                                                                Ş
                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HTPG_RICCN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 5
                                                                                         Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                              Matches
                                                                                                                                                                                                                                                                                                                                          modified and this statement is not removed entities requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                SEQUENCE
                                                                                                                                                                        Chaperone;
                                                                                                                                                                                                                                      Pfam; PF02518; HATPase_c; 1. Pfam; PF00183; HSP90; 2.
                                                                                                                                                                                                                                                               HAMAP; MF_00505; -; 1.
InterPro; IPR003594; ATPbind_ATPase
InterPro; IPR001404; Hsp90.
                                                                                                                                                                                                                                                                                                                                                                               This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way
                                                                                                                                              DOMAIN
                                                                                                                                                           DOMAIN
                                                                                                                                                                                               PRINTS; PR00775; HEATSHOCK90.
SMART; SM00387; HATPase_c; 1.
PROSITE; PS00298; HSP90; 1.
                                                                                                                                                                                                                         PRINTS;
                                                                                                                                                                                                                                                                                                    EMBL; AE008676; AAL03840.1; PIR; F97862; F97862.
                                                                                                                                                                                                                                                                                                                                                                                                                                            -!- SUBUNIT: Homodimer (By similarity).
-!- SUBCELLULAR LOCATION: Cytoplasmic (By similarity).
-!- SIMILARITY: BELONGS TO THE HEAT SHOCK PROTEIN 90 F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Science 293:2093-2098(2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ogata H., Audic S.,
Samson D., Roux V.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRAIN-Malish
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bacteria; Proteobacteria; Alp
Rickettsiaceae; Rickettsieae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chaperone protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          28-FEB-2003 (Rel.
28-FEB-2003 (Rel.
28-FEB-2003 (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HTPG_RICCN P58478;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -!- FUNCTION: Molecular chaperone. Has
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Raoult D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=21442074; PubMed=11557893;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A. STRAIN=Malish 7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Rickettsia conorii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HTPG OR RC1302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein G)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mechanisms of evolution in Rickettsia
                           127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      161
 67
                                                   11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   31;
                                                                                          Similarity
DTGSWGSQFKCLQVQEIERKEEDYTVTSVFTF-----
                                                FVSAALATQAETTSAKAGENP--LWAHEELLGKY--QDAWKSIDQGVSVTYVLAKTTYEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QPQEVCIK----VFVPRTKPIIPSVFWIWKTADFQERESYDMFG--IYYEGHPHL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QGCELWVKKSHYKHVPDYCTFVFNVFCA-----KDRKTYDIFNEECVYNGEPWL
                           YSSFMVADKVTVTSRKAGEDKVHIW-ESDGLGEYTVSDSDKEFTRGTEIVLHIKK----EE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VKAQNLTSVAIALYAYGFNYLRSQCAYDVSPG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYV----PNAD
                                                                                                                                                       ATP-binding; Heat shock; Complete proteome
1 328 A; SUBSTRATE-BINDING (BY
329 544 B (BY SIMILARITY).
                                                                                                                                545
621 AA;
                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             41, Created)
41, Last sequence update)
41, Last annotation update)
htpG (Heat shock protein htpG)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Renesto-Audiffren P., Fourn
Cossart P., Weissenbach J.,
                                                                                                                                70804 MW;
                                                                                          8.6%;
21.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Alphaproteobacteria; eae; Rickettsia.
                                                                              46;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  20;
                                                                                          Score 96.5; DB Pred. No. 0.55;
                                                                                                                                              С.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                FF6E5B352DD8F017 CRC64;
                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATPase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           conorii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A
                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Fournier P.-E.,
ch J., Claverie
                                                                                                                                                                                                                                                                                                                                                        http://www.isb-sib.ch/announce/
                                                                              81;
                                                                                                       1.
                                                                                                                                                                                                                                                                                                                                                                    Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  activity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Rickettsiales;
                                                                                                       Length 621;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (High temperature
                                                                                                                                                                    (BY
                                                                                Indels
  RNASSPIKYYNVTETVKAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ₽.
                                                                                                                                                                                                                                                                                                                                                                    bу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -GDLASVYHLTKVDDNAD
                                                                                                                                                                                                                                                                                                                                                                                                                                                FAMILY
                                                                                                                                                                        SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           prowazekii.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (By
                                                                                                                                                                                                                                                                                                                                                                      and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      J.-M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Barbe V.,
                                                                              35;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27;
                                                                                                                                                                                                                                                                                                                                                                      for
                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             144
  117
                                                   66
                            182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         160
                                                                                5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  G
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 2
HBPM_RHIAP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                 dimensional structure.*;
nol. Cell 3:661-671(1999).
-I- FUNCTION: BINDS HISTAMINE WITH A OUTCOMPETE HISTAMINE RECEPTORS SUPPRESS INFLAMMATION DURING BLOOM SUBSECTION SUPPRESS OUTCOMPETED OUTCOMPETED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRAND
STRAND
TURN
HELIX
TURN
STRAND
TURN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TURN
STRAND
TURN
                         This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the Entropean Bioinformatics Institute. There are no restructe by non-profit institutions as long as its content modified and this statement is not removed. Usage by and entitles requires a license agreement (See http://www.isb-sorsend.an.email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRAND
TURN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAND
                                                                                                                                                                                                                                                              TISSUE-Salivary gland;
MEDLINE-99288454; PubMed-10360182;
Paesen G.C., Adams P.L., Harlos K., Nuttall P.A., Stus
"Tick histamine-binding proteins: isolation, cloning,
dimensional structure.";
                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HBPM_RHIAP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                . Similarity
72; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ENAFRYETEDGQVFTDVIAYSD-DNCDVIYVPGTDGNEEGYELWT--TDYDNIPANCLNK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNAD----QGCELWVKKSHYKHVPDYCTFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DP-VWGNDFTCVGVMANDVNEDEKSIQAEFLFMNNADTNMQF--ATEKVTAVKMYGY-NR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DTGSWGSOFKCLQVQEIERKEEDYTVTSVFTF-RNASSPIKYYNVTETVKAVFQYGYKNI 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FNEY-AVGRETRDVFTSACL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FNVFCAKDRKTYDIFNEECV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LLLTEVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LLILSLALVLA-----LSQVKGNQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       77
81
91
97
110
112
122
126
1136
1138
1138
1138
1138
1138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    188
21464 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       80
89
92
106
110
121
123
135
137
143
157
161
174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 25.8%;
36.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 290.5; DB 1, pred. No. 8.5e-19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6923A3E902552B6F CRC64;
                                                                                                                                                                                     BLOOD FEEDING
                                                                                                                                                                                                   A HIGH-AFFINITY.
INDICATES THAT I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A
                                             http://www.isb-sib
                                                                                                                                                                                                     ITS FUNCTION :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length
                                                                                                                                                                                                                                                                                         Stuart
                                                                                             restrictions
                                                                                                                                                                                                                                                                           and
                                                                and
                                                                                                                                                                                                                                                                         d three-
                                                                                                                 EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 190;
                                                                                                                   a collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                17;
                                                                for commercial
                                                                                                               outstation
                                             .ch/announce/
                                                                                                                                                                                                IS
                                                                              'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                         ö
                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               66
```

```
HBP1_
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DR DR FT FT SO
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DISULFID
DISULFID
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       InterPro; IPR002970; His_binding. Pfam; PF02098; His_binding; 1. ProDom; PD152455; His_binding; 1. Signal 1 18 POTE
                                                                                                                                                                                            dimensional structure.";
mol. Cell 3:661-671(1999).
-i- FUNCTION: BINDS HISTAMINE WITH A HIGH-AFFINITY.
-UTCOMPETE HISTAMINE RECEPTORS INDICATES THAT IT SUPPRESS INFLAMMATION DURING BLOOD FEEDING.
-i- SUBCELLULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                                                                                       30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
16-OCT-2001 (Rel. 40, Last annotation update)
Female-specific histamine-binding protein 1 precursor (Rhipicephalus appendiculatus (Brown ear tick).
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RHIAP
                                                                                                                                            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                TISSUE=Salivary gland;
MEDLINE=99288454; PubMed=10360182;
Paesen G.C., Adams P.L., Harlos K.,
"Tick histamine-binding proteins: 1.
dimensional structure.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                   HBP1_RHIAP
077420;
                                                         EMBL; U96080; AAC63106.1;
HSSP; O77421; 1QFT.
                                                                                                          modified and entities requ
                                                                                                                                   use
                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                    Pfam; PF02098;
                                             InterPro; IPR002970; His_binding
                                                                                                or send
                                                                                                                                                                                                                                                                                                                                                NCBI_TaxID=34631;
                                                                                                                                                                                                                                                                                                                                                             Parasitiformes; Ixodida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HSSP; 077421;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             69;
                                                                                                an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MQVVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKT
                                                                                                          requires a
                                                                                                                     non-profit institutions as long and this statement is not removed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KIPDCCKFTMAYFAQQQEKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HVPDYCTFVFNVFCAKDRKT 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Y---TTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSDEGDYELWVSEDKID 163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TQTTD-GVWGEEFTCVSVTAEKIGKKKLNATI----LYKNKHLTDLKESHETITVWKAYD 106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYENDTGSWGSQFKCLQV--QEIERKEEDYTVTSVFTFRNAS-SPIKYYNVTETVKAVFQ 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MKVLLLV - - LGAALCQNADA - - - - - -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           YGYKNIRNAIEYQVGGGLNIT--DTLIFTDGELCDVFYVP---NADQG-CELWVKKSHYK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            65
137
200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1
19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1QFT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ΑĄ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                               STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             193
169
22851
                                    _bind:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             18
200
                                                                                                          license
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        23.6%;
                                                                                                                                                                                                                                                                                                                                                             Ixodidae; Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ž
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            POTENTIAL.

MALE-SPECIFIC HISTAL
PROTEIN.
BY SIMILARITY.
BY SIMILARITY.
BY SIMILARITY.
                                                                                                          agreement (See
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 265;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           183
                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                        isolation,
                                                                                                                        removed.
                                                                                                                                                                                                                                                                     Nuttall P.A., Stussolation, cloning,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQA
                                                                                                                                                                                                                                                                                                                                                                                                                                                               190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .6e-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ₹
                                                                                                                                   as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HISTAMINE-BINDING
                                                                                                                                                                                                                                                                                                                                                                                                  precursor (FS-HBP1).
                                                                                                                       Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CRC64;
                                                                                                                                                                                                                         ITS
                                                                                                                                                                                                                                                                                     Stuart D.I.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                       THE ABILITY TO
                                                                                                                                                                                                                                                                         and
                                                                                                                                                                                                                                                                        three
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26;
                                                                                                                        for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SALIVARY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                         70
                                                                                                                                   5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62
```

ProDom;

PD152455;

His_binding;

18

POTENTIAL

```
OM protein - protein search, using sw model
                                                                                   GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
```

Run on:

August 4, 2003, 17:13:07; Search time 24 Seconds (without alignments) 409.524 Million cell updates/sec

Title:
Perfect score:
Sequence: DRET6
1125
1 MKMQVVLLLTFVSAALATQA.....DRKTYDIFNEECVYNGEPWL 209

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 127863 seqs, 47026705 residues

Total number of hits satisfying chosen parameters:

127863

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

Database : SwissProt_41:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

32 33 33	222 223 225 24 25	17 18 20	112 113 154	87654521	Result No.
75.5 75.5 75 75 75	76.5 76.5 76.5 76.5	79.5 79.5 78.5 78.5	84.5 82.5 82.5 81.5 81.5	290.5 265 252 97.5 96.5 96	Score
	, a a a a a a a a		1777777 1228856	25.8 22.6 22.4 8.7 8.6 8.5 7.7	Query Match
1489 414 424 626 647	909 393 724 1031	621 629 864 215	656 621 318 381 637 700	190 200 190 174 621 616 639 2778	Length
					BB
RICSO RNG2_SCHPO Y878_METUA PORA_CAMJE HTPG_BUCBP HTPG_MYCTU	LEYSCLCANMA HEX_ADEM1 IDH_STRMU DDX4_HUMAN DCK_MOUSE YDG9_SCHPO HYSA_STRPN	HTPG_HELPJ HTPG_HELPY HTPG_CHLTE YG3M_YEAST NO22_SOYBN	HTPG_MYCLE HTPG_RICPR Y692_METTH RF1R2_CAEEL TRG5_ECOLI DNAK_RICPR HS9C_DICDI	HBP2_RHIAP HBPM_RHIAP HBP1_RHIAP NUGC_MESVI HTPG_RICCN HTPG_BORBU HTPG_TREPA FAF_DROME FAF_DROME	ID
P938/1 Sulfolobus 014188 schizosacch Q58288 methanococc P80672 campylobact Q89a93 buchnera ap Q50667 mycobacter1			1940892	077421 rhipicephal 077422 rhipicephal 077420 rhipicephal 077420 rhipicephal 09murl mesostigma P58478 rickettsia P42555 borrelia bu 083949 treponema p P55824 drosophila	

74.5 6.7 3951 1 VGF1_IBVB 74.5 6.6 400 1 GTR3_RABIT 74.5 6.6 492 1 YGCE_ECOLI 74.5 6.6 492 1 YGCE_ECOLI 74.5 6.6 890 1 LPN1_HUMAN 74.5 6.6 890 1 THYG_HUMAN 74.6 6.6 27.68 1 THYG_HUMAN 74 6.6 406 1 IDH_SPHYA 74 6.6 854 1 TRIC_SULTO 74 6.6 854 1 TRIC_SULTO 75 6.5 355 1 UBPC_HUMAN 75 6.5 553 1 GKPZ_HUMAN 76 6.5 553 1 GKPZ_HUMAN 77 6.5 553 1 GKPZ_HUMAN
3951 1 400 1 492 1 726 1 890 1 2768 1 406 1 854 1 912 1 912 1 355 1 2896 1
1 VGF1_IBVB 1 GTR3_RABIT 1 YGCE_ECOLI 1 NF11_YEAST 1 LPN1_HUMAN 1 THYG_HUMAN 1 THYG_HUMAN 1 TRIC_SULTO 1 TBP1_HABIN 1 TBP2_HUMAN 1 UBPC_HUMAN 1 GKP2_HUMAN 1 HCYG_CCTDO
VGFL_IBVB GTR3_RABIT TYGCE_ECOLI MFIL_YEAST LEN1_HUMAN THYG_HUMAN THYG_HUMAN TOH_SPHYA TRIC_SULTO TBPL_HAEIN UBPC_HUMAN HCYG_OCTDO

ALIGNMENTS

T T T T T T T T T T T T T T T T T T T	388888888		RESULT HBP2_RH ID HB AC 07 DT 30 DT 30 DT 28 DT 28 C Fe OS Rh OC Fe OC Fe OC NC
Interpro; III Interpro; III pfam; pF0209 probom; pD130 Signal; 3D-s SIGNAL CHAIN DISULFID DISULFID DISULFID TURN HELIX HELIX HELIX HELIX HELIX TURN STRAND	This SWISS-PROT entry between the Swiss In the European Bioinfor use by non-profit modified and this state antities requires a lor send an email to lor send an email to 1 por send an email to 2 pbb; 10e7; 19-APR-00.	SEQUENCE FROM N.A., AND SEQUENCE FROM N.A., AND TISSUE-Salivary gland; meditine-99288454; pubMe Paesen G.C., Adams P.L. "Tick histamine-binding dimensional structure." Mol. Cell 3:661-671(199 Mol. Cell 3:661-671(199 -i- FUNCTION: BINDS HIS SUPPRESS INFLAMMATI-i- SUBCELLULAR LOCATIO	
7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		CE FROM N.A., AND "Salivary gland; "B=99288454; PubMee, "G.C., Adams P.L. histamine-binding ional structure." icell 3:661-671(199) NCTION: BINDS HIS' TCOMPETE HISTAMINI PPRESS INFLAMMATIO PPRESS INFLAMMATIO	STA (Rel. (Rel. (Rel. (Rel.)
InterPro; 19 ARK 100	Institute of Bioinformatics and the EMBL outstation promatics Institute. There are no restrictions on institutions as long as its content is in no we tatement is not removed. Usage by and for commerci license agreement (See http://www.isb-sib.ch/announc license@isb-sib.ch).	SEQUENCE FROM N.A., AND X-RAY CRYSTALLOGRAPHY (1.25 ANGSTROMS). TISSUE=Salivary gland; MEDLINE=99288454; PubMed=10360182; Paesen G.C., Adams P.L., Harlos K., Nuttall P.A., Stuart D.I.; Paesen G.C., Adams P.L., Harlos K., Nuttall P.A., Stuart D.I.; Tick histamine-binding proteins: isolation, cloning, and three-dimensional structure."; Mol. Cell 3:661-671(1999). TOUCCTION: BINDS HISTAMINE WITH A HIGH-AFFINITY. THE ABILITY TO OUTCOMPETE HISTAMINE RECEPTORS INDICATES THAT ITS FUNCTION IS TO SUPPRESS INFLAMMATION DURING BLOOD FEEDING. THE ABILITY TO SUPPRESS INFLAMMATION DURING BLOOD FEEDING.	RHIAP RHIAP STANDARD; PRT; 190 AA. 071421; 071421; 30-MAY-2000 (Rel. 39, Created) 30-MAY-2000 (Rel. 39, Last sequence update) 28-EEB-2003 (Rel. 41, Last annotation update) Female-specific histamine-binding protein 2 precursor (FS-HBP2). Rhipicephalus appendiculatus (Brown ear tick). Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari; Parasitiformes; Ixodida; Ixodidae; Rhipicephalus. NCBI_TaxID-34631;

Page 6

Search Job ti	₽	Qy	₽	Qy	문	Qy
Search completed: Job time : 42 secs	324	165	265	141	210	81
Search completed: August 4, 2003, 17:15:58 Job time : 42 secs	324 LAMEMATYGHV 334	165 LMVKKSHYKHV 175	265 TLIVDPDGKGLDSHWQKTAFALLVGVILHALYKAKDDGGTATLPSVDAMLADPNRDIG-E 323		210KGELWALTAGWROKHAKNKVLRFEPASTSGGVCWNPLDEIRLGTEYEVGDVQNLA 264	81 QEIERKEEDYTYTSVETERNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNIT 140

· Ø

```
RESULT 14
T08530
traG protein - Enterobacter aerogenes plasmid R751
c;Species: Enterobacter aerogenes
c;Species: Enterobacter aerogenes
c;Date: 11-Jun-1999 #sequence_revision 11-Jun-1999 #text_change 21-Ju1-2000
c;Accession: T08530
R;Thorsted, P.B.; Shah, D.S.; Macartney, D.; Kostelidou, K.; Thomas, C.M.
Plasmid 36, 95-111, 1996
                                                                                                                                                                몽
                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                      ф
                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT
D82922
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A:Map position: 3
A:Introns: 18/3; 137/3; 256/2
C:Superfamily: herpesvirus ribonucleoside-diphosphate reductase
                                                                                                                                                                                                                                                                                                                                                                                                                         A; Genetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   R;Glass, J.I.; Lefkowitz, E.J.; Glass, J.S.; Heiner, submitted to GenBank, February 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 conserved hypothetical UU198 [imported] - Ureaplasma urealyticum
C;Species: Ureaplasma urealyticum
C;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change ;
C;Accession: D82922
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: DNA
A;Residues: 1-381 <WILL>
A;Cross-references: EMBL:Z35637; PIDN:CAA84688.1; GSPDB:GN00021; CESP:C03C10.3
A;Experimental source: clone C03C10
C;Genetics:
A;Gene: CESP:C03C10.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross-references: GB:AE002119; GB:AF222894; NID:g6899153; PIDN:AAF30605.1; GSPDB:GN00:
A;Experimental source: serovar 3; biovar 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Accession: D82922
A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Description: The complete sequence of Ureaplasma urealyticum: Alternate views of A; Reference number: A82870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Residues: 1-390 <GLA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Genetics:
                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                         0U198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local
                                                                                                                                                                                                                                                                                                                                                                                                                          code:
                                                                                                                                                                269
                                                                                                                                                                                                124
                                                                                                                                                                                                                               224
                                                                                                                                                                                                                                                                                             167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              111 TETVKAVFQYGYK 123
                                                                                                                                                                                                                                                             67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            58 VLAKTTYENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPI-----
                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                             29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                              NIRNAIEYQV 133
                                                                                                                                                                                                                                                                                          ILAYSRTGGANASGTAEAFLTSNPLISKKEFKKKYHDIYKVIEAG---TYGKLIRSTEES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TVEEVDLGKDMNDW----
                                                                                                                                                              DLKNYLPFEI 278
                                                                                                                                                                                                                              NTOAW---
                                                                                                                                                                                                                                                        DTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGY---K
                                                                                                                                                                                                                                                                                                                        LLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTY-VLAKTTYEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VQVSEARFFYGFQ 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LEIVDQTKAASAEETNNESEVNELDADEPMLQDLDNRFVIFPLKHHDIWNFYKKAVASFW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LTFVSAALATQAETTSAKAGENPLWAHEELLG------KYQDAWKSIDQGVSVTY
                                                                                                                                                                                                                                                                                                                                                                                                                          SGC3
                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21.8%;
                                                                                                                                                                                                                                                                                                                                                                        7.3%;
22.3%;
                                                                                                                                                                                                                              ---TNISKDNVDGSITYL--
                                                                                                                                                                                                                                                                                                                                                         28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20; Mismatches
                                                                                                                                                                                                                                                                                                                                                                        Score 82; DB
Pred. No. 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 82;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EKMNGDEQYFISRILAFFAASDGIVNENLCERFSNE 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 2;
13;
                                                                                                                                                                                                                                                                                                                                                                                       ۷;
                                                                                                                                                                                                                            STGFILKNYDQIIAKGYKIAYLQNK
                                                                                                                                                                                                                                                                                                                                                         51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         56;
                                                                                                                                                                                                                                                                                                                                                                                       Length 390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 381;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C.R.; Chen,
                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                         22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                20-Aug-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         small
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                E.Y.; Cassell,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -- KYYNV 110
                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         chain
                                                                                                                                                                                                                                                                                          223
                                                                                                                                                                                                                              268
                                                                                                                                                                                                                                                          123
                                                                                                                                                                                                                                                                                                                         66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           57
                                                                                                                                                                                                                                                                                                                                                         ū
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  G.H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ∄.
                밁
                                           γQ
                                                                            В
                                                                                                          Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 닭
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            멁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ρ
```

```
traG protein - Escherichia coli plasmid R751
C;Species: Escherichia coli
C;Date: 31-Dec-193 #sequence_revision 02-Au
C;Accession: S22992; S42274
                                                                                                                                                                                                                 A;Genome: plasmid
                                                                                                                                                                                                                                        A;Gene: traG
                                                                                                                                                                                                                                                                        A; Cross-references: EMBL: X54458;
                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Residues: 1-628, 'D', 630-637 <LAN>
                                                                                                                                                                                                                                                                                                                            A; Accession: S42274
                                                                                                                                                                                                                                                                                                                                            A; Reference number: S42274
                                                                                                                                                                                                                                                                                                                                                              submitted to the EMBL Data Library,
                                                                                                                                                                                                                                                                                                                                                                                 R; Lanka,
                                                                                                                                                                                                                                                                                                                                                                                                  A; Cross-references: EMBL: X54458
                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Title: Nucleotide sequence and organization of genes flanking the transfer origin A;Reference number: S22992; MUID:92190548; PMID:1665997 A;Accession: S22992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R; Ziegelin, G.; Pansegrau, DNA Seq. 1, 303-327, 1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Title: Conservation of the genetic switch between replication A;Reference number: Z16434; MUID:97118926; PMID:8954881 A;Accession: T08530 A;Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                   A; Molecule type: DNA
A; Residues: 1-637 <ZIE>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Genome:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Cross-references: EMBL:U67194; NID:g1572520; PIDN:AAC64474.1; C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: DNA
A; Residues: 1-637 <THO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Gene: traG
                                                                                                                                             Matches
                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                       Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15
                                                                                                                                                                Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    plasmid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       141
150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 150
                                                                     90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      90 LYSTYGLLGVAVAKYYTSNSSKANEYLHGSARWAEKKDIQAAGLLPRERNYLEIYTGKAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              46;
                                                                                                       5
                                                                                                                                           46; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5 VVLLLTFVSAALATQAETTSAKAGE----NPLWAHEE-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
PTATGVYVGGWODKDGNFFYLRHSGPEHVLTYAPTRSGKGVGLVVPTLLSWGASSVITDL
                                --LIGKYQDAWKSID------QGVSVTYVLAKTTYENDTG-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DTLIFTDGELCDVFYV-
                                                                     LVSTVGLLGVAVAKVVTSNSSKANEYLHGSARWAEKKDIQAAGLLPRERNVLEIVTGKAA
                                                                                                       VVLLLTFVSAALATQAETTSAKAGE----NPLWAHEE----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LWMEMATYGHV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TLIVDPDGKGLDSHWQKTAFALLVGVILHALYKAKDDGGTATLPSVDAMLADPNRDIG-E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 --LLGKYQDAWKSID------QGVSVTYVLAKTTYENDTG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LWVKKSHYKHV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNIT 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PTATGVYVGGWQDKDGNFFYLRHSGPEHVLTYAPTRSGKGVGLVVPTLLSWGASSVITDL
                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      R751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KGELWALTAGWRQKHAKNKVLRFEPASTSGGVCWNPLDEIRLGTEYEVGDVQNLA
                                                                                                                                                              7.3%;
18.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             7.3%;
18.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             334
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ₩.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Strack, B.; Balzer, D.; Kroeger,
                                                                                                                                           30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30;
                                                                                                                                                                                                                                                                      NID: 942656; PIDN: CAA38327.1;
                                                                                                                                                              Score 82;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 82;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                              August 1990
                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 02-Aug-1994 #text_change 08-Oct-1999
                                                                                                                                                          DВ
25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB
25;
                                                                                                                                                                               2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2
                                                                                                                                             99;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; 88
                                                                                                                                                                               Length 637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                             Indels
                                                                                                                                                                                                                                                                      PID:g42657
                                 SWGSQFKCLQV 80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SWGSQFKCLQV
                                                                                                                                             86;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             M.; Kruft, V.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PID:g1572579
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  and transfer genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -PNADQGCE 164
                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      . 149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  80
                                                                                                         37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Lanka,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
```

```
A; Experimental:
C; Genetics:
A; Gene: yomI
    RESULT 10
C97308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT
C69192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R;Smith, D.R.; Doucette-Stamm, L.A.; Deloughery, C.; Lee, H.; Dubois, J.; Aldredge, T.; Qiu, D.; Spadafora, R.; Vicaire, R.; Wang, Y.; Wierzbowski, J.; Gibson, R.; Jiwani, Ki, S.; Church, G.M.; Daniels, C.J.; Mao, J.; Rice, P.; Noelling, J.; Reeve, J.N. J. Bacteriol. 179, 7135-7155, 1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              stomatin-like protein - Methanobacterium thermoautotrophicum C; Species: Methanobacterium thermoautotrophicum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ş
                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                          ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C;Date: 05-Dec-1997 *sequence_revision 05-Dec-1997 *text_change 24-Sep-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Cross-references: GB:AE000848; GB:AE000666; NID:g2621761; A;ExperImental source: strain Delta H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Molecule type: DNA
A; Residues: 1-318 <MTH>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Title: Complete genome sequence of Methanobacterium thermoautotrophicum Delta A;Reference number: A69000; MUID:98037514; PMID:9371463 A;Accession: C69192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Experimental source: strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Status: preliminary; nucleic acid sequence not shown; translation
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Ma
Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ;Superfamily: erythrocyte band 7 integral membrane protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Accession: C69192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Госа
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MTH692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  743 LLVSTLVGGAFAALG-----
                                                                                                                                                                                                                                                          124
                                                                                                                                                                                                                                                                                                   56
                                                                                                                                                                                                                                                                                                                                                                         10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         64 YENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQ---Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ch 7.4%; 1 Similarity 23.3%; 51; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                G
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
38; Conserv
                                                                                                                                                                                                                                                          NIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELW 166
                                                                                                                                                                                                                                                                                                KVD---MREQVVDVPPQEVITKDNTVVVVDCVIFYEVVDPFNAVYNVVDFYQAITKLAQT 112
                                                                                                                                                                                                                                                                                                                                                                                                                VVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTY 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SKDELKQYKQIADYND-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S-----HYKHVPDYCTFVFNVFCAKDRKTYDIFNEECVY 203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GYDSQGNAILKTNKELEKAIE-----NTKEYLALKKQETRDSAKKTFEDASKE--IKK 889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NKDSTDKLIQQYK-----ELQKYKESRSLTS-----DEEQEYLQVTQQLAQTFPALVK 838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSID--QGVSVTYVLAKTT
                                                                                                                                                                                                                    NLRNII-----GDLELDQTL--TSREMINTQLREVLDEATDKW 148
                                                                                                                                                                                                                                                                                                                                     ENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIK-YYNVTETVKAVFQYGYK 123
                                                                                                                                                                                                                                                                                                                                                                           VLLVLAFKSLKILRPYEKGVV-------ERLGKYQ---RTVESGLVVIIPFIEAIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                source:
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----KNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELWVKK 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                  7.3%; Score 82.5; |
23.3%; Pred. No. 9.2
Live 23; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 83; DB 2; Le
Pred. No. 1.1e+02;
?7; Mismatches 79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KGRPKWDLIADDDDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -WALESLISSFAEAKKAKDDFEQSQQTNVEAITT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          멂
                                                                                                                                                                                                                                                                                                                                                                                                                                                      77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2;
                                                                                #text_change 14-Sep-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 2285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 920
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                          K.S.; Zeng, Q.; Gibson,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PIDN: AAB85197.1; PID: 926217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          318;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (strain Delta
                                                                                                                                                                                                                                                                                                                                                                                                                                                      25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  790
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ξ
                                                                                                                                                                                                                                                                                                                                                                         55
                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ξ.
                                            ₽:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               funct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        T.;
                                            Lee
hypothetical protein CO3C10.3 - Caenorhabditis elegans C;Species: Caenorhabditis elegans C;Date: 15-Oct-1999 #sequence_revision 15-Oct-1999 #te) C;Accession: T18876
R;Berks, M.
submitted to the EMBL Data Library, August 1994
A;Accession: T18876
```

```
RESULT 12
T18876
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Experimental source: C; Genetics:
                                                                                                                                                                                                                                                                                                         C; Geneti
A; Note:
                                                                                                                                                                                                                                                                                                                                      A;MoLecule type: DNA
A;Residues: 1-360 <GRA>
A;Cross-references: EMBL:U42580; NID:94028896;
A;Experimental source: specific host Chlorella
                                                                                                                                                                                                                                                                                                                                                                                                                 submitted to the EMBL Data A; Reference number: 218806 A; Accession: T17996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          hypothetical protein A494R - Chlorella C; Species: Chlorella virus PBCV-1 C; Date: 15-Oct-1999 #sequence_revision
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Title: Genome Sequence and Comparative Analysis of the A;Reference number: A96900; MUID:21359325; PMID:21359325 A;Accession: C97308 A;Status: preliminary A;Molecule type: DNA A;Residues: 1-163 <KUR>
                                                                                        Q
                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Experimental source: Clostridium acetobutylicum
                                                                                                                      밁
                                                                                                                                                  Š
                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                              R; Graves, M.V.; Van Etten,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C; Accession: T17996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Gene: CAC3322
                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                 A; Status: preliminary; translated
                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local :
                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                          Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local
                                                                                                                                                                                                                                                                                                          A494R
                                                             137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       108
                                                                                                                                                     92
                                                                                                                        85
                                                                                                                                                                                   43
                                                                                                                                                                                                                35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         l Similarity
37; Conserv
                                                                                                                                                                                                                                            Similarity 25.8
41; Conservative
                                                                                         DTLIFTDGELCDVFYVPNADQGCELWVKKSHYKHVPDYC
                                                                                                                                                     VTSVFTFRNASSP-IKYYNVTETV-----KAVFQYGYKNIR-NAIE---YQVGGGLNIT 140
                                                                                                                                                                                  HEAVNGNIQLFQEKKMKLENGVN-----TKKTEE------KIKQIEEDEINYL 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KISVKQMDYETAKQITKWNYEKPFSIYNMNESDECIKELLSGYYFSAYDDKNYIVGYYGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAV-------FQYGYKNI 125
                                                                                                                                                                                                             HEELLGK---YQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQVQEIERKEEDYT 91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    KHVPDYCTFVFNVFCAKD-RKTYDIFNEECV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GEAAQIPVGEQLGIYSYKNITDIGIGLNPNLC----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RNAIEYQVGGGL-----CELWVKKSHY
                                                             TLDAVTDRETVDQIYTCTCGGQMELWVNSTQSDLVCNEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -----DFARNTLCAKDFRLTVATFNKPAI 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                          7.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7.3%;
                                                                                                                        --PFIKEYDVKETVSDVTEQNSVFQVKSKNTHTNTFRKYLFHVEKVSNPT 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                J.L.
Library,
                                                                                                                                                                                                                                               19;
                                                                                                                                                                                                                                            ; Score 82; DB
; Pred. No. 12;
19; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 82; DB
Pred. No. 4.2;
                                                                                                                                                                                                                                                                                                                                                                                                    from
                                                                                                                                                                                                                                                                                                                                                                                                                                                 мау
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                    GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             15-Oct-1999 #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             virus PBCV-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     202
                                                                                                                                                                                                                                                                                                                                       PIDN:AAC96861.1
strain NC64A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      <u>ب</u>
                                                                                                                                                                                                                                                                          2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PID:g15026402;
ATCC824
                                                                                                                                                                                                                                               59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 163
                                                                                                                                                                                                                                                                          Length 360
                                                                                           179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -GQGLGFDFFCCGL-----
                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Solvent-Producing Bacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              15-oct-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         52;
                                                                                                                                                                                                                                             40;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GSPDB:GN00168
                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         σ
                                                                                                                                                                                                                                               æ
```

#text_change

11-Jan-2000

```
RESULT
AF1394
                                                                                          밁
                                                                                                                     Qy
                                                                                                                                                                                        Š
                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Experimental source:
C; Genetics:
A; Gene: htpG; RP840
C; Superfamily: heat sho
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Title: The genome sequence of Rickettsia prowazekii and the origin of mitochondria. A;Reference number: A71630; MUID:99039499; PMID:9823893
A;Accession: H71645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                heat shock protein htpG (htpG) RP840 - C:Species: Rickettsia prowazekii C:Date: 21-Nov-1998 #sequence_revision
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-656 <STO>
A;Cross references: GB:AL450380; NID:g13093407; PIDN:CAC30574.1; GSPDB:GN00147
C;Genetics:
A;Gene: htpG
C;Superfamily: heat shock protein 90
 autolysin, amidase
                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Residues: 1-621 <AND>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C;Accession: H71645
R;Andersson, S.G.E.; Zomorodipour, A.; Andersson, J.O.; Sicheritz-Ponten, T.;
Nature 396, 133-140, 1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         γO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  맑
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Cross-references: GB:AJ235273; GB:AJ235269; NID:g3861237; PIDN:CAA15264.1; PID:g38613
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Status: preliminary; nucleic acid sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         뮹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local
                                                                                                                                                                                                   121
                                                                                                                                                                                                                                      187
                                                                                                                                                                                                                                                                                                          127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         137
                                                                                                                                                                                                                                                                                                                                             11
                                                                                                                                                                                                                                                                       66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11
                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                          FVSAALATQAETTSAKAGENPLWAHE-ELLGKY--QDAWKSIDQGVSVTYVLAK--TTYE
                                                                                                                                                                                               GYKNIRNAIEYQVG---
                                                                                                                                                                                                                                                                     NDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNV----TETVKAVFQY 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FVSAALATQAETTSAKAGENPL--WAHEELLGKYQDAWKSID----QGVSVTYVLAKTTYE
                                                                                                                                                              QYKEFYKSLSYAVDDPWVTLHNKNEGAIEFTNLLFIPSSKTFDLFH-PDRKKRVKLYIKR
                                                                                                                                                                                                                                  DH------FRLKHIVKSYSDHIAVPIYFCDEAGNNEIQLNSASALWTRPKSEITED
                                                                                                                                                                                                                                                                                                      YSSFMVADKVTVTSRKAGESKVHTWESDGLGEYIVADSEQEFTRGTEIVLYIKKSETTFL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ASSPIKYYNVTETVKAVFQYGYKNIRNA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DELHDYTSEWKIRELYKKYSDFIAWPIRMEVERRAPATSDGEGADGEEQVTIETQTI--N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NDTGSWGSQFKCLQV------QEIERK------EEDYTVTSVFTFRN 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       YSSFMVANKVELLTRKAGETAATRWSSD----GEATYTIESVDEAPQGTSVTLHLKPEDFE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IPSHAPFDLFNSDAKIGMQLYVKRVFIMSDCDQLMPMYLRFVKGVVDAED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TDGELCDVFYVPNADQGCELWVKKSHY----KHVPDYCTFVFNVFCAKD 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SMKALWTKSKDEVSEDEYKEFYKHIAHAWDDPLEVIAMKAEGTFEYQ------
                                                                                                                                                                                                                                                                                                                                                                                                                                                  heat shock protein 90
                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                         -SHYKHVPDYCTFVFNVFCAKD 190
[imported] - Listeria monocytogenes (strain EGD-e)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        strain
                                                                                                                                                                                                                                                                                                                                                                                               18.9%;
                                                                                                                                                                                                                                                                                                                                                                                                        7.58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              21.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Madrid
                                                                                                                                                                                                                                                                                                                                                                                42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          38; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                               Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                               --GGLNITDTLIFTDGELCDVFYVPNADQGCELWVKK 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                21-Nov-1998 #text_change 03-Nov-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Rickettsia
                                                                                                                                                                                                                                                                                                                                                                                               84.5;
No. 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              No.;
                                                                                                                                                                                                                                                                                                                                                                                                  15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            not shown; translation not
                                                                                                                                                                                                                                                                                                                                                                                                                 DB
                                                                                                                                                                                                                                                                                                                                                                              ; 88
                                                                                                                                                                                                                                                                                                                                                                                                               2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   prowazekii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----IEYQVGGGLNITDTLIF 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                              37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         352
                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ALLF
                                                                                                                                                                                                                                                                                                        186
                                                                                                                                                            295
                                                                                                                                                                                                                                  236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Alsmark,
```

A; Molecule type: DNA A; Residues: 1-2285 <

Cross-references: GB: 299115;

GB:AL009126; NID:g2634478;

PIDN:CAB14053.1; PID:e11835

```
C.; Bron, S.; Emmo
A.; Ehrlich, S.D.; Emmo
A.; Ehrlich, S.D.; Emmo
A; Authors: Foulger, D; Fritz, C.; Fujita, M.; Fujita, Y.; Fuma, S.; Galizzi, A.; Galicch, J.; Harwood, C.R.; Henaut, A.; Hilbert, H.; Holsappel, S.; Hosono, S.; Hullo, M Koetter, P.; Koningstein, G.; Krogh, S.; Kunano, M.; Kurita, K.; Lapidus, A.; Lardino A; Authors: Lauber, J.; Lazarevic, V.; Lee, S.M.; Levine, A.; Liu, H.; Masuda, S.; Mau y, M.; Ogawa, K.; Ogiwara, A.; Oudega, B.; Park, S.H.; Parro, V.; Pohl, T.M.; Portete Rieger, M.; Rivolta, C.; Rocha, E.; Roche, B.; Rose, M.; Sadaie, Y.; Sato, T.; Scanl A; Authors: Schleich, S.; Schroeter, R.; Scoffone, F.; Seklyuchi, J.; Sekowska, A.; Se akeuchi, M.; Tamakoshi, A.; Tanaka, T.; Terpstra, P.; Tognoni, A.; Tosato, V.; Uchiya T.; Winters, P.; Wipat, A.; Yamamoto, H.; Yamane, K.; Yasumoto, K.; Yata, K.; Yoshida A; Authors: Yoshikawa, H.F.; Zumstein, E.; Yoshikawa, H.; Danchin, A. A; Title: The complete genome sequence of the Gram-positive bacterium Bacillus subtili A; Reference number: A69580; MUID:98044033; PMID:9384377
A; Scattus: nucleic acid sequence not shown; translation not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C;Species: Listeria monocytogenes
C;Date: 27-Nov-2001 #sequence_revision 27-Nov-2001
C;Accession: AF1394
R;Glaser, P.; Frangeul, L.; Buchrieser, C.; Amend, R;Glaser, P.; Frangeul, G.; Duchaud, E.; Durand, L.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; NCUESTANDA
A; Status: preliminary
A; Molecule type: DNA
A; Residues: 1-917 <GLA>
A; Cross-references: GB-NC_003210;
A; Cross-references: GB-NC_003210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT
T12796
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Description: The complete nucleotide A;Reference number: 217583
A;Accession: T12796
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Science 294, 849-852, 2001

A; Authors: Kreft, J.; Kuhn, M.; Kunst, F.; Kurapkat, G.; ok, C.; Schlueter, T.; Simoes, N.; Tierrez, A.; Vazquez-l
A; Title: Comparative genomics of Listeria species.
A; Reference number: AB1077; MUID:21537279; PMID:11679669
A; Accession: AF1394
                                                                                                                                                                                                                                                                                                                                                                                                                        A;Cross-references: EMBL:AF020713; NID:g3025478; PID:g3025510; PIDN:AAC13005.1, R;KNDSt, F.; Ogssawara, N.; Moszer, I.; Albertini, A.M.; Alloni, G.; Azevedo, V.; C.; Bron, S.; Brouillet, S.; Bruschi, C.V.; Caldwell, B.; Capuano, V.; Carter, N.† A.; Ehrlich, S.D.; Emmerson, P.T.; Entian, K.D.; Errington, J.; Fabret, C.; Ferral
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Molecule type: DNA
A; Residues: 1-2285 <LAZ>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         submitted to the EMBL Data Library,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      R; Lazarevic,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    probable transglycosylase - Bacillus subtilis phage SPBc2
C;Species: Bacillus subtilis phage SPBc2
C;Date: 13-Aug-1999 #sequence_revision 13-Aug-1999 #text_change 15-Oct-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Experimental
C; Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Status: translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  D.; Jones, L.M.; Karst,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                l Similarity
37; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      V.; Duesterhoeft, A.; Soldo,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   T12796; A69911
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KYKAMQV-NYEKIEYDKAITAYSRVKTATGNSVWTKPNKTEGAKLVNPLSSYSGKNLRII 324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYY--NVTETVKAV---FQYGYKNIR-- 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GKGTVWSHD---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDT---GSWG------S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REAKTSGGTIWYQFSIGG-----KTIGWVDSKALNTFYTPSMEK 363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -----NAIEYQ--VGGGLNITDTLIFTDGELCDVFYVPNADQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                    1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         7.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PIDN:CAD00636.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 84.5;
Pred. No. 24;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         August 1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                sequence of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                F.; Kurapkat, G.; Madueno, rrez, A.; Vazquez-Boland, J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               27-Nov-2001 #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -AVTRYLGGTTHTDPVAYFNQWGYNFNNFVSLINE 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B.; Hilbert, H.; Mauel, C.; Karamata,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Amend,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DВ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Dussurget,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A.; Baquero, r
Dussurget, O.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                the Bacillus subtilis SPbetac2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PID:g16412046;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    F.; Berc...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     27-Nov-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GSPDB:GN00177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        E.; Maitournam,
.A.; Voss, H.; W
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Berche, P.;
itian, K.D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            73
                                                                                                                                                                                                                                                                                                                                                                                                                             er, N.M.;
Ferrari,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; Bloec
Fsihi,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                pro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Α.
```

```
ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    R;Fraser, C.M.; Norris, S.J.; Weinstock, G.M.; White, O.; Sutton, G.G.; Dodson, rson, J.; Khalak, H.; Richardson, D.; Howell, J.K.; Chidambaram, M.; Utterback, they, L.; Weidman, J.; Smith, H.O.; Venter, J.C. Science 281, 375-388, 1998
A;Title: Complete genome sequence of Traponema pallidum, the syphilis spirocheta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 3
F71258
F71258
F71258
F7264
F71258
F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               R;Ojaimi, C.; Davidson, B.E.; Saint Girons, I.; Old, I.G. Microbiology 140, 2931-2940, 1994
A;Title: Conservation of gene arrangement and an unusual organization of rRNA genes A;Reference number: I40241; MUID:95111614; PMID:7812434
A;Accession: I40247
                                                                              밁
                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Status: preliminary; nucleic acid sequence not shown; translation not shown A;Molecule type: DNA A;Residues: 1-650 <KLE>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Title: Genomic sequence of a Lyme disease spirochaete, Borrelia burgdorferi. A;Reference number: A70100; MUID:98065943; PMID:9403685 A;Accession: G70169
                                                                                                                                                                                                                                                                                                                                                                                                C; Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Cross-references: GB:AE001265; GB:AE000520; A;Experimental source: strain Nichols
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Residues: 1-639 <COL>
A; Cross-references: GB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Status: preliminary; nucleic acid sequence not shown; translation not shown A;Molecule type: DNA A;Residues: 1-639 <COL>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Reference number: A71250; MUID:98332770; PMID:9665876
A;Accession: F71258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C; Superfamily: heat shock protein 90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             C; Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule type: DNA
A; Residues: 531-609 < RES>
                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Gene: TP0984
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Cross-references: GB:L32145; NID:g476004; PIDN:AAC41403.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Status: translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Experimental source: strain B31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: GB:AE001157; GB:AE000783; NID:g2688471;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local :
                                                                                                                                                                                                                                                                                Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              327
                                                                                  182 VVLHLSQENSEFATR-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       213 ---YANKWKIQEIIKKYSNHINYPIYIKYSEPIMKDGKQEGIEEKEEKLNETTALWTKN- 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                155 FYSAFIVSEKVEVTSKKALESDAYIWSSDGKTGYEIEKAKKEESGTEIKLYLNKEGLE--
    55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11 FVSAALATQ-AETTSAKAGENP--LWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYEND 67
                                                                                                                                                                                                                                               50;
                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
VTYVLAKTTYENDTGSWGSQFKCLQVQEIERKEEDY----TVTSVFTFRNASSPIKYYN 109
                                                                                                                                                             VVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQD-----AWKSIDQGVS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GVKLFINRIFITDSEGSLLPNYLRFIKGIIDCQD 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCELWVKK-----SHYKHVPDYCTFVFNVFCAKD 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KSEIKAEEYNEFYKNT-TFDYENPLMHIHTKAEGNLEYTNLFYVPSKAPYDLYY-PNTKP 326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQ 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              heat shock protein 90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                        7.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8.5%; Score 96; DB 2; Length 650 21.5%; Pred. No. 1.4; tive 34; Mismatches 92; Indels
                                                                                                                                                                                                                                                                        Score 87;
Pred. No.
                                                                                                                                                                                                                                           Mismatches
                                                                                  ---WRLEEVIKKYSDHIAFPIYLHYLQKEYDKDGA 228
                                                                                                                                                                                                                                                                                                                      B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NID:g3323295; PIDN:AAC65938.1; PID:g33233
                                                                                                                                                                                                                                                                                                                  2
                                                                                                                                                                                                                                       52; Indels
                                                                                                                                                                                                                                                                                                             Length 639
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PIDN:AAC66919.1; PID:g26884
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PID: g476594
                                                                                                                                                                                                                                       90;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                       Gaps
                                                                                                                                                         54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13 R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MCD0
```

1896		- ~ -
110 1865 167	Qy 53 VSVTYVLAKTTYENDTGSWGSQFKCLQVQEIERKBEDYTYTSVFTFRNASSPIKYYNV	^ - ^
52 1815	Oy 6 VLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQG :: : : :	
12;	Query Match 7.6%; Score 86; DB 2; Length 2747; Best Local Similarity 22.9%; Pred. No. 75; Matches 54; Conservative 28; Mismatches 72; Indels 82; Gaps	
NCBIP:1290	A;Status: preliminary A;Molecule type: nucleic acid A;Molecule type: nucleic acid A;Residues: 1-2704, 'VT', 2707, 'ANNV' <fiz> A;Cross-references: GB:L04958; NID:g157410; PIDN:AAF01346.1; PID:g6013475 A;Note: sequence extracted from NCBI backbone (NCBIN:127836, NCBIN:129008, C;Keywords: alternative splicing</fiz>	
NCBIP:1278		
development.	, G.M.; Lehmann, R. 1992 e is required for Drosophila eye and embryo MUID:93202020; PMID:1295747	~~~==
J	RESULT 4 B49132 fat facets (faf) splice form 1 - fruit fly (Drosophila melanogaster) C;Species: Drosophila melanogaster C;Species: 19-Dec-1993 #sequence_revision 25-Apr-1997 #text_change 01-Dec-2000 C:Accession: Ad0132	
	Qy 160 DQGCELWVKKSHYKHVPDYCTFVENVFCAKD 190 : : : : :: Db 304 DYKPGVKLFVKRVFITDDEKELLPVYLRFVRGVIDSED 341	
303	Db 278 TK	
277		

ESULT 5 87112

heat shock protein Hsp90 family [imported] - Mycobacterium leprae C:Species: Mycobacterium leprae C:Species: Mycobacterium leprae C:Species: Mycobacterium leprae C:Species: Mycobacterium leprae C:Date: 20-Apr-2001 #sequence_revision 20-Apr-2001 #text_change 10-May-2001 C:Accession: A87112
R;Cole, S.T.; Eiglmeier, K.; Parkhill, J.; James, K.D.; Thomson, N.R.; Wheeler, P.R.; Davles, R.M.; Devlin, K.; Duthoy, S.; Feltwell, T.; Fraser, A.; Hamiln, N.; H. eam, M.A.; Rutherford, K.M.
Nature 409, 1007-1011, 2001
A;Authors: Rutter, S.; Seeger, K.; Simon, S.; Simmonds, M.; Skelton, J.; Squares, A;Title: Massive gene decay in the leprosy bacillus.
A;Reference number: A86909; MUID:21128732; PMID:11234002
A;Accession: A87112

P.R.; Holro

æ .

*

4)

```
Result
No.
                                                                                                                                                                                                                                                                     Database :
                                                                                                                                                                                                                                                                                                     Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Run on:
                                                                                                Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                 PIR_76:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DRET6
1125
1 MKMQVVLLLTFVSAALATQA......DRKTYDIFNEECVYNGEPWL 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           August 4, 2003, 17:13:11; Search time 40 Seconds (without alignments) 502.481 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             283308 seqs, 96168682 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                            SUMMARIES
```

Query Match Best Local Matches 4	RESULT 1 F97862 C;Species: Rickettsia C C;Species: Rickettsia C C;Species: Rickettsia C C;Accession: F97862 C;Accession: F97862 Science 293, 2093-2098, Science 293, 2093-2098, A;Title: Mechanisms of A;Reference number: A97 A;Reference number: A97 A;Accession: F97862 A;Status: preliminary A;Molecule type: DNA A;Residues: 1-621 <kur> A;Cross-references: GB: C;Genetics: C;Genetics: A;Gene: htpG C;Superfamily: heat sho</kur>		30 76. 31 76. 32 76. 33 76. 34 76. 35 7 35 7 36 7 36 7 36 7 40 7 41 7 42 7 42 7 45 75.
Simi 3;	protein h Rickettsi Sep-2001 F97862 Audic, 3 2093-20 Schanisms chanisms number: profess reliminar type: DNA type: DNA type: DNA type: DNA type: DNA		76.5 76.5 76.5 76.5 76.5 76.5 76.7 76.7
Match 8. Local Similarity 21. Les 43; Conservative	protein htpg [impo Rickettsia conorii Sep-2001 #sequence n: F97862 ; Audic, S.; Renes 3, 2093-2098, 2001 schanisms of Evolut echanisms of Evolut n: profession approach proliminary type: DNA : 1-621 <kur> chanisms of Evolut n: profession approach illocation approach type: DNA : 1-621 <kur> chanisms of Evolut no number: A97700; M no number: A977</kur></kur>		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
8.6%; 21.0%; vative	protein htpG [imported] Rickettsia conorii Rickettsia conorii 1: Sep-2001 #sequence_revi. 1: F97862 1: F97862 1: God Renesto-Au 1: God Ren		914 587 635 807 2819 2610 510 510 511 1031 11066 11066 1277
08;	rte_re _re to- ion UID		0000000000000000
sc P1 46;	d] - visio Audif in R :2144	≯	\$70906 E87420 T46407 A9055122 A55122 A71816 A64706 118474 A64706 171874
96.5; DB 2; No. 1.2; smatches 81;	RESULT 1 F97862 F97862 C;Species: Rickettsia conorii C;Species: Rickettsia conorii C;Date: 30-Sep-2001 #sequence_revision 30-Sep-2001 #text_change C;Accession: F97862 C;Accession: F97862 C;Accession: F97862 Science 293, 2093-2098, 2001 Science 293, 2093-2098, 2001 A;Title: Mechanisms of Evolution in Rickettsia conorii and Ricket, Reference number: A97700; MUID:21442074; PMID:11557893 A;Accession: F97862 A;Besidues: F97867 A;	ALIGNMENTS	800 120 120 120 120 120 120 120 120 120 1
Length 621; Indels 35; Gaps 10;	<pre>pnorii (strain Malish 7) #text_change 22-Oct-2001 urnier, P.E.; Barbe, V.; Samson, D.; torii and Rickettsia prowazekii. 557893 PID:g15620441; GSPDB:GN00173</pre>		transferrin-bindin poly-beta-hydroxyb probable RNA helic hypothetical prote conserved hypothet deoxycytidine kina hypothetical prote lipase-like protei hypothetical prote probable arylsulfa heat-shock protein probable GTPase ac hyaluronidase [imp hypothetical prote hypothetical prote hypothetical prote

A; Authors	probable neat snoc	H64433		/00	0.0	,,
Nature 39		101409	۸ د	100	٠.	, ,
; Bowman,	hypothetical prote	T26909) N	241	n σ ο α	7.7
son, D.;	hypothetical prote	T25870	2	506	6.9	77.5
R;Fraser,	ribonuclease (EC 3	T12076	N	223	6.9	77.5
C; Accessi	hypothetical prote	S27938	N	1871	6.9	78
C;Date: 1	cytochrome P450 52	O4CKA3	₽	523	6.9	78
C;Species		A26669	N	215	6.9	78
N;Alterna	hypothetical prote	S60441	N	864	7.0	78.5
heat shoc	hypothetical prote	A75121	۵	455	7.0	78.5
G70169	hypothetical prote	AG2547	2	725	7.1	79.5
RESULT 2	chaperone and heat	B64546	N	621	7.1	79.5
	90Kda chaperone -	A71961	N	621	7.2	80.5
	dnaK-type molecula	D71729	N	627	7.2	81.5
Db		S22992	N	637	7.3	82
•	traG protein - Ent	T08530	N	637	7.3	82
Qy	conserved hypothet	D82922	N	390	7.3	82
	hypothetical prote	T18876	2	381	7.3	82
Db	hypothetical prote	T17996	N	360	7.3	82
	probable acetyltra	C97308	N	163	7.3	82
Qy	stomatin-like prot	C69192	N	318	7.3	82.5
	probable transglyc	T12796	N	2285	7.4	83
Db	autolysin, amidase	AF1394	N	917	7.5	84.5
	heat shock protein	H71645	2		7.5	84.5
Qy	heat shock protein	A87112	2		7.6	85
	fat facets (faf) s	B49132	2		7.6	86
מם	probable heat shoc	F71258	N	639	7.7	87
	heat shock protein	G70169	N	650	8.5	96
Qy	heat shock protein	F97862	2	621	8.6	96.5
Matches	Description	ID	BG	Match Length DB	Match	Score
Best I					Ouery	

Matche	Matches 43; Conservative 46; Mismatches 81; Indels 35; Gaps 10;
Qy	11 FVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYEN 66
Db	127 YSSFMVADKVTVTSRKAGEDKVHIW-ESDGLGEYTVSDSDKEFTRGTEIVLHIKKEE 182
Qy	67 DTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAV 117
Db	183 DTFLDHFRLKHIVKSYSDHIAVPIYFFDEAGNNEIQLNSASALWTRPKSEITEEQ 237
Qy	118 FQYGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELWVKK- 169
Db	238 YKEFYKSLSYAIDDDWITMHNKNEGAIEFTNLLFIPSSKTFDLFH-PDRKRRVKLYIKRV 296
Qy	170SHYKHVPDYCTFVFNVFCAKD 190
DЬ	297 FISDENIDLIPSYLRFLRGVVDSED 321
RESULT 2 G70169	2
heat sho	ock protein 90 (htpG) homolog - Lyme disease spirochete
C;Specie C;Date: C;Access	C;Species: Borrelia burgdorferi (Lyme disease spirochete) C;Datc: 13-Peb-1998 #sequence_revision 13-Feb-1998 #text_change 20-Aug-1999 C:Accession: G70169: I40247
R;Fraser	R;Fraser, C.M.; Casjens, S.; Huang, W.M.; Sutton, G.G.; Clayton, R.; Lathigra, R.; son, D.; Peterson, J.; Kerlavage, A.R.; Quackenbush, J.; Salzberg, S.; Hanson, M.;
Nature 3 A; Author	Nature 390, 580-586, 1997 A; Authors: Smith, H.O.; Venter, J.C.
5,54,010	CO. CHICAL HOC., TOMOCE, C.C.

B. Wh

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Post-processing: Minimum Match 0%
                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                        282
251.5
251.5
239
239
102.5
97.5
                                                                                                                                                                                                                                                                                                                 Score
        84
83
81
79:5
77
75
                                                                                                                                                                                                                                                                                                                 Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DRET6
1125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       451899 seqs, 118759770 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      August 4, 2003, 17:16:01; Search time 52 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 MKMQVVLLLTFVSAALATQA.....DRKTYDIFNEECVYNGEPWL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Published_Applications_AA:*

1: /cgn2_6/ptodata/2/pubpaa/US07_PUBCOMB.pep:*

2: /cgn2_6/ptodata/2/pubpaa/PCT_NEW_PUB.pep:*

3: /cgn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*

4: /cgn2_6/ptodata/2/pubpaa/US06_PUBCOMB.pep:*

5: /cgn2_6/ptodata/2/pubpaa/US07_NEW_PUB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   : /cgn2_6/ptodata/2/pubpaa/USO9A_PUBCOMB.pep:*
) /cgn2_6/ptodata/2/pubpaa/USO9A_PUBCOMB.pep:*
) /cgn2_6/ptodata/2/pubpaa/USO9C_PUBCOMB.pep:*
) /cgn2_6/ptodata/2/pubpaa/USO9_NEW_PUB.pep:*
2: /cgn2_6/ptodata/2/pubpaa/USO9_NEW_PUB.pep:*
3: /cgn2_6/ptodata/2/pubpaa/USOB_PUBCOMB.pep:*
4: /cgn2_6/ptodata/2/pubpaa/USOC_PUBCOMB.pep:*
5: /cgn2_6/ptodata/2/pubpaa/USOC_PUBCOMB.pep:*
5: /cgn2_6/ptodata/2/pubpaa/USOC_NEW_PUB.pep:*
7: /cgn2_6/ptodata/2/pubpaa/USOC_NEW_PUB.pep:*
7: /cgn2_6/ptodata/2/pubpaa/USOC_NEW_PUB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /cgn2_6/ptodata/2/pubpaa/PCTUS_PUBCOMB.pep:*
/cgn2_6/ptodata/2/pubpaa/US08_NEW_PUB.pep:*
/cgn2_6/ptodata/2/pubpaa/US08_PUBCOMB.pep:*
                                                                                                                                                                                                                                                                                                                   Length
        182
1172
1172
1172
722
7221
2217
2285
659
913
914
912
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gapext 0.5
                                                                                                                                                                                                                                                                                                                   BB
        15
15
15
15
    4 US-10-085-572-7
4 US-10-087-195-7
4 US-10-087-195-8
4 US-10-087-195-6
4 US-10-085-572-6
4 US-10-085-572-6
US-09-815-242-10796
US-09-728-914-4
US-09-728-914-22
0 US-09-923-183-2
4 US-10-043-344-5
5 US-10-043-344-5
5 US-10-043-344-9
                                                                                                                                                                                                                                                                                                                   Ħ
                                                                                                                                                                                                                                                                                                                                                                           SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (without alignments)
477.323 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     451899
                                                                                                                                                                                                                                                                                                              Description
Sequence 7, Appli
Sequence 8, Appli
Sequence 8, Appli
Sequence 6, Appli
Sequence 6, Appli
Sequence 10796, A
Sequence 10796, A
Sequence 22, Appli
Sequence 22, Appli
Sequence 12, Appli
Sequence 12, Appli
Sequence 11, Appli
Sequence 7, Appli
Sequence 7, Appli
Sequence 9, Appli
                                                                                                                                        Sequence
Sequence
                                                                                                  Sequence 22,
Sequence 2,
```

5	4	ū	ັນ	Ξ	Ö	9	8	7	5	5	4	ũ	ລ	ĩ	õ	ĕ	æ	7	6	ŭ	4	ũ	ຶນ	ï	õ	9	œ	.7	ō
69.5	69.5	69.5	69.5	69.5	70	70	70	70	70	70.5	70.5	70.5	70.5	71	71	71	71	71.5	71.5	71.5	71.5	71.5	72	72	72		72.5	73	74.5
6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6. 2	6. 2	6.3	6.3	6. ω	6.3	6.3	6.3	6.ω	δ. ω	6.4	6.4	6.4		6.4			6.4	6.4		6.5	
374	374	373	373	225	853	638	576	576	247	470	470	451	451	677	619	618	550	2012	2012	924	891	564	956	956	507	2756	911	1417	068
15	15	14	11	11	15	11	15	9	10	14	11	14	11	10	11	15	15	11	10	14	14	15	15	14	10	15	15	10	14
US-10-270-878-39	US-10-270-875-39	Ļ	US-09-759-130B-376	-09-847-208-1	US-10-156-761-8930	US-09-842-758-22	48-3	US-09-731-175-4	US-09-738-626-3674	US-10-042-431-69	US-09-759-130B-439	US-10-042-431-43	US-09-759-130B-413	US-09-862-027-38	US-09-934-455-142	US-10-295-403-166	US-10-081-872-106	US-09-800-198-57	US-09-808-602-68	US-10-028-056-5	US-10-028-056-4	US-10-081-872-120	US-10-093-037-63	US-10-121-032-63	US-09-738-626-5458	US-10-331-061-7	US-10-043-344-107		US-10-028-056-3
39,	39,	Sequence 6, Appli	76,	Sequence 110, App	893(Sequence 22, Appl	30,	•	3674	69,	439,	43,	413,	Sequence 38, Appl	142,	Sequence 166, App	106,	57,		Sequence 5, Appli	Sequence 4, Appli	0	63,	•	ŗ	Sequence 7, Appli	Sequence 107, App	78,	•

ALIGNMENTS

RESULT 1 US-10-085-572-7

Sequence 7, Application US/10085572 Publication No. US20020151499A1 GENERAL INFORMATION:

```
Вþ
                                                                                         ő
                                                                                                                             밁
                         S
                                                                                                                                                        δÃ
                                                                                                                                                                                            Query Match
Best Local S
Matches 66
                             150 LCDVFYVPNAD---QGCELWVKKSHYKHVPDYCTFVFNVFCAKDRKTYDIFNEECV 202
                                                             62 SIQAEFLEMNNADTNMQF--ATEKVTAVKMYGY-NRENAFRYETEDGQVFTDVIAYSD-D 117
                                                                                  91 TVTSVFTF-RNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDGE 149
                                                                                                                           66; Conservative
NCDVIYVPGTDGNEEGYELWT - - TDYDNIPANCLNKFNEY - AVGRETRDVFTSACL 170
                                                                                                                                                                                            25.1%; Score 282; DB 14; 37.5%; Pred. No. 7.3e-23; tive 29; Mismatches 69;
                                                                                                                                                                                                                           Length 171;
                                                                                                                                                                                              Indels 12;
                                                                                                                                                                                              8
```

; LENGTH: 171 ; TYPE: PRT ; ORGANISM: FS-HBP ; US-10-085-572-7

SEQ ID NO 7

SOFTWARE: FastSEQ for Windows Version

4.0

APPLICANT: Nuttall, Patricia, Ann
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Conjunctivitis
FILE REFERENCE: 2488-1-003
CURRENT APPLICATION NUMBER: US/10/085,572
CURRENT FILING DATE: 2002-02-27
PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR FILING DATE: 2000-08-24
PRIOR FILING DATE: 1909-09-01
NUMBER OF SEQ ID NOS: 8
NUMBER OF SEQ ID NOS: 8

```
밁
                                           Ş
                                                                                                                                                                                ; TYPE: PRT
; ORGANISM: MS-HBP
US-10-085-572-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-085-572-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; LENGTH: 171
; TYPE: PRT
; ORGANISM: FS-HBP 2
US-10-087-195-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 7, Application US/10087195
Publication No. US20020193306A1
GENERAL INFORMATION:
APPLICANT: Nuttall, Patricia, Anne
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Allergic Rhinitis
FILE REFERENCE: 2488-1-004
CURRENT FILING DATE: 2002-03-01
CURRENT FILING DATE: 2002-03-01
                                                                                           Matches
                                                                                                                                                                                                                                                                     SEQ ID NO 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 8, Application US/10085572 Publication No. US20020151499A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQ ID NO 7
                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR FILING DATE: 2000-08-24
PRIOR APPLICATION NUMBER: 9920674.0
PRIOR FILING DATE: 1999-09-01
                                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION NUMBER: US/10/085,572 CURRENT FILING DATE: 2002-02-27
                                                                                                                                                                                                                                                                                       NUMBER OF SEQ ID NOS: 8
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: Nuttall, Patricia, Ann
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Conjunctivitis
FILE REFERENCE: 2488-1-003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR APPLICATION NUMBER: 9920673.2
PRIOR FILING DATE: 1999-09-01
NUMBER OF SEQ ID NOS: 8
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION NUMBER: PCT/GB00/03287 PRIOR FILING DATE: 2000-08-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .0-087-195-7
                                                                                                                                                                                                                                                LENGTH: 182
                                                                                                                Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    118
                             30 NPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQV--QEIERKE 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62 SIQAEFLEMNNADTNMQF -- ATEKVTAVKMYGY - NRENAFRYETEDGQVFTDVIAYSD-D 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                31 PLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQVQEIERKEEDY 90
                                                                                                              Similarity
NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTD-GVWGEEFTCVSVTAEKIGKKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDP-VWGNDFTCVGVMANDVNEDEK 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCDVIYVPGTDGNEEGYELWT--TDYDNIPANCLNKFNEY-AVGRETRDVFTSACL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LCDVFYVPNAD----QGCELWVKKSHYKHVPDYCTFVFNVFCAKDRKTYDIFNEECV 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TVTSVFTF-RNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDGE 149
                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25.1%; Score 282; DB 14; 37.5%; Pred. No. 7.3e-23;
                                                                                    22.4%; Score 251.5; DB 14; 35.3%; Pred. No. 1.7e-19; tive 29; Mismatches 66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              29; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                69;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                  Length
                                                                                                                                  182;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                12;
                                                                                       17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 170
    59
                                                                                       8
```

```
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
US-10-085-572-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; TYPE: PRT; ORGANISM: MS-HBP 1
US-10-087-195-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-085-572-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-087-195-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 6, Application US/10085572 Publication No. US20020151499A1 GENERAL INFORMATION:
                                                                                            SOFTWARE: FastSEQ for Windows Version 4.0 SEQ ID NO 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQ ID NO 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
                                                                                                                                      CURRENT APPLICATION NUMBER: US/10/085,572
CURRENT FILING DATE: 2002-02-27
PRIOR APPLICATION NUMBER: PCT/GB00/03282
PRIOR FILING DATE: 2000-08-24
PRIOR APPLICATION NUMBER: 9920674.0
PRIOR FILING DATE: 1999-09-01
NUMBER OF SEQ ID NOS: 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 8, Application US/10087195 Publication No. US20020193306A1
                                                                                                                                                                                                                                                                                                           APPLICANT: Nuttall, Patricia, Ann
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Conjunctivitis
FILE REFERENCE: 2488-1-003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR APPLICATION NUMBER: PCT/GB00/03287
PRIOR FILING DATE: 2000-08-24
PRIOR APPLICATION NUMBER: 9920673.2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION NUMBER: US/10/087,195
CURRENT FILING DATE: 2002-03-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Allergic Rhinitis
FILE REFERENCE: 2488-1-004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS: 8
SOFTWARE: FastSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Nuttall, APPLICANT: Paesen,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR FILING DATE:
                      ORGANISM: FS-HBP1
                                                    TYPE: PRT
                                                                     LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH: 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity es 61; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              145 FTDGELCDVFYVP---NADQG-CELWVKKSHYKHVPDYCTFVFNVFCAKDRKT 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   113 FSDYKNCDVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKT 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60 LNATI ---- LYKNKHLTDLKESHETITVWKAYDY --- TTENGIKYETQGTRTQTFEDVFV 112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          88 EDYTVTSVFTFRNAS-SPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNIT--DTLI 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         30 NPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQV--QEIERKE 87
                                                                          172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60 LNATI----LYKNKHLTDLKESHETITVWKAYDY---TTENGIKYETQGTRTQTFEDVFV 112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTD-GVWGEEFTCVSVTAEKIGKKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FSDYKNCDVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FTDGELCDVFYVP---NADQG-CELWVKKSHYKHVPDYCTFVFNVFCAKDRKT 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EDYTVTSVFTFRNAS-SPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNIT--DTLI 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1999-09-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Patricia, Anne
Guido, Christiaan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          22.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 251.5; DB Pred. No. 1.7e-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 14; Length 182;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            indels 17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
```

Query Match

21.2%;

Score 239;

DB 14;

Length 172;

```
US-09-815-242-10796
Sequence 10796, Application US/09815242
Patent No. US20020061569A1
GENERAL INFORMATION:
APPLICANT: Haselbeck, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Nuttall, Patricia, Anne
APPLICANT: Paesen, Guido, Christiaan
TITLE OF INVENTION: Treatment of Allergic Rhinitis
FILE REFERENCE: 2488-1-004
CURRENT APPLICATION NUMBER: US/10/087,195
CURRENT FILING DATE: 2002-03-01
PRIOR APPLICATION NUMBER: PCT/GB00/03287
PRIOR FILING DATE: 2000-08-24
PRIOR APPLICATION NUMBER: 9220673.2
PRIOR FILING DATE: 1999-09-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-087-195-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 6
LENGTH: 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 6, Application US/10087195 Publication No. US20020193306A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity
               APPLICANT: Oblean, Karl L.
APPLICANT: Zyskind, Judith W.
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
APPLICANT: Carr, Grant J.
APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity 34.5%; Pi Matches 61; Conservative 24;
CURRENT APPLICATION NUMBER: US/09/815,242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: PRT
ORGANISM: FS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                               117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       149 ELCDVFYVPNAD----QGCELWVKKSHYKHVPDYCTFVFNVFCAKDRKTYDIFNEECV 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       117 DNCYVIYALGPDGSGAGYELWA--TDYTDVPASCLEKFNEYAA-GLPVRDVYTSDCL 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 149 ELCDVFYVPNAD----QGCELWVKKSHYKHVPDYCTFVFNVFCAKDRKTYDIFNEECV 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60 EKNVEAWFMFMNNADTV-YQHTFEKATPDKMYGY-NKENAITYQTEDGQVLTDVLAFSD- 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     89 DYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDG 148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    29 ENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQVQEIERKEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  89 DYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDG 148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           29 ENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQVQEIERKEE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDP-VWGNDFTCVGTAAQNLNED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDP-VWGNDFTCVGTAAQNLNED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EKNVEAWFMFMNNADTV-YQHTFEKATPDKMYGY-NKENAITYQTEDGQVLTDVLAFSD- 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                          DNCYVIYALGPDGSGAGYELWA--TDYTDVPASCLEKFNEYAA-GLPVRDVYTSDCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21.2%; Score 239; DB 14; Length 172; 34.5%; Pred. No. 3.7e-18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 24; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred. No. 3.7e-18;
24; Mismatches 82;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 59
```

```
Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                        ; ORGANISM: Ixodes scapularis US-09-728-914-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; ORGANISM: Enterococcus faecalis US-09-815-242-10796
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version
SEQ ID NO 10796
LENGTH: 722
                                                                                                                                                    SEQ ID NO 4
LENGTH: 221
  Query Match 8.7
Best Local Similarity 23.7
Matches 49; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 4, Application US/09728914 Patent No. US20010046499A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: FIKRIG, EROL
APPLICANT: DAS, SUBRAYA
TITLE OF INVENTION: TICK ANTIGENS AND COMPOSITIONS AND METHODS COMPRISING
TITLE OF INVENTION: THEM
FILE REFERENCE: YU-107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -09-728-914-4
                                                                                                                                                                                                                                                                                   CURRENT APPLICATION NUMBER: US/09/728,914
CURRENT FILLING DATE: 2000-12-01
PRIOR APPLICATION NUMBER: 60/169,048
PRIOR FILING DATE: 1999-12-03
                                                                                                                                                                                                                    PRIOR APPLICATION NUMBER: 60/240,716
PRIOR FILING DATE: 2000-10-16
NUMBER OF SEQ ID NOS: 39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER: 60/253,625
PRIOR FILING DATE: 2000-11-27
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR FILING DATE: 2000-12-22
                                                                                                                                                                                               SOFTWARE: PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT: KANTOR, FRED S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LENGTH: 72
TYPE: PRT
                                                                                                                                    TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                362 IQIAVKKGNDKIKSYDDLKGKKVGVKIGTESADFLEKNKKKYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             117 V-----FQY-GYKNIRNAIEY-QVGG---GLNITDTLIFTDGELCDVFYVPNADQG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         163 CELWVKKSH--YKHVPDYCTFVFNV-----FCAKDRKTYD 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           256 ETNTQDAGEQMK-----KITPKKEKYVIASDSTF----APFEFQNAQGDYVGIDVDLVKR 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           204 LVGDKETGSSYGFAVKKGQNP-----ELIKKFNAGLKNLKDNG---TYDKILNNYLATGD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    16 LATQAETTSA-----KAGENPLWAHEELLGKYQDAWKSI-DQGVSVTYVLAKTTY-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  65 ENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNV-----TETVKA 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAELQGFTVEFKFIGFSSAVQAVESGQADGMVAGMTITD-----DRKKAFDFSVPYFDSG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
8.7%; Score 97.5; DB 23.4%; Pred. No. 0.015; tive 43; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9.1%; Score 102.5; DB 26.9%; Pred. No. 0.023;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ٥.
                                         DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    72;
                                           Length 221;
    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 722;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  404
    37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        64
    14;
```

10;

Length 2285;

79;

Indels

Gaps

```
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                              US-09-932-183A-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; ORGANISM: Ixodes scapularis US-09-728-914-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 9
US-09-728-914-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
CURRENT APPLICATION NUMBER: US/09/932,183A CURRENT FILING DATE: 2001-08-17
PRIOR APPLICATION NUMBER: US 09/308,375
PRIOR FILING DATE: 1999-05-14
PRIOR APPLICATION NUMBER: PCT/US98/1828
PRIOR FILING DATE: 1998-09-08
PRIOR FILING DATE: 1998-09-08
PRIOR APPLICATION NUMBER: EP9719636.4
PRIOR APPLICATION NUMBER: EP9719636.4
PRIOR FILING DATE: 1997-09-15
NUMBER OF SEQ ID NOS: 3
SOFTWARE: FastSEQ for Windows Version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                             GENERAL INFORMATION:
APPLICANT: EStell, David A.
TITLE OF INVENTION: Proteases From Gram-Positive Organisms
FILE REFERENCE: GC394C1-US
                                                                                                                                                                                                                                                                                                                Sequence 2, Application US/09932183A Patent No. US20020127641A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 22, Application US/09728914 Patent No. US20010046499A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQ ID NO 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: KANTOR, FRED S.
APPLICANT: FIKRIG, EROL
APPLICANT: DAS, SUBRATA
TITLE OF INVENTION: TICK ANTIGENS AND COMPOSITIONS AND METHODS COMPRISING
TITLE OF INVENTION: THEM
FILE REFERENCE: YU-107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CURRENT APPLICATION NUMBER: US/09/728,914
CURRENT FILING DATE: 2000-12-01
PRIOR APPLICATION NUMBER: 60/169,048
PRIOR FILING DATE: 1999-12-03
PRIOR APPLICATION NUMBER: 60/240,716
PRIOR FILING DATE: 2000-1-16
NUMBER OF SEQ ID NOS: 39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE: PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                    135 ADTRCLILRISRTQKVPLRSCLLWVKKTFLKNPLRHCRFLFDVFCNWRREDF 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99 RNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDG------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         μ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
27; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             --ELCDVFYVPNAD----QGCELWVKKSHYKHVPDYCTFVFNVFCAKDRKTY 194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RNDSS----YEFVKRTLSWISVGEQPSRHTIEVEITGTSKSKSEVKVTKGYEEYDFNTVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QETPDDCLNKFFEYC-NTTQIYRVYYPSC 219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KHVPDYCTFVFNVFCAKDRKTYDIFNEEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GEHGFPNVMNFQRTPIG---IATDNLVLYSNYVNCTVLRIPFTNQGERHCDLWMANLTLS 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FQYGYKNIRNAIEYQVGGGLNITDTLI-FTDGELCDVFYVPNADQG---CELWVKK-SHY 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WRTYD-VTDFSGNPVQCENFRVMEKR----TPTNYSFQYRYKSKN-SWETIDETLILKDI 134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KTTYENDTGSWGSQFKCLQVQEIERKEEDYTVTSV-FTFRNASSPIKYYNVTET--VKAV 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYGSTGTTTRPGTRGARMIVTTAPPEEDP-----SKYKEQNATRVVE--MNATQWVK 80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TFVSAALATQAET-----TSAKAGENPLWAHEELLGKY--QDAWKSIDQGVSVTYVLA 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7.5%; Score 84; DB 9; Length 217; 24.1%; Pred. No. 0.45;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ω
••
                           밁
                                                              δÃ
                                                                                                            멍
                                                                                                                                                     Qγ
                                                                                                                                                                                                    닭
                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                   Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; ORGANISM: Thermococcus celer US-10-090-624-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 11
US-10-090-624-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-932-183A-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: PatentIn version 3.0 SEQ ID NO 12 LENGTH: 659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 12, Application US/10090624 Publication No. US20020132335A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQ ID NO 2
LENGTH: 2285
                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER: 151969/1997
PRIOR FILING DATE: 1997-06-10
NUMBER OF SEQ ID NOS: 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CURRENT APPLICATION NUMBER: US/10/090,624
CURRENT FILING DATE: 2002-03-06
PRIOR APPLICATION NUMBER: 09/445,472
PRIOR FILING DATE: 1999-12-06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: KATO, Ikunoshin
TITLE OF INVENTION: SYSTEM FOR EXPRESSING HYPERTHERMOSTABLE
FILE REFERENCE: TAKAKURA=6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: TAKAKURA, Hikaru
APPLICANT: MORISHITA, Mio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: PRT ORGANISM: Bacillius subtilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH:
                                                                                                                                                                                                                                                                                                                                                                              Local Similarity 25.9 nes 53; Conservative
                           584 GATKITGDLTFDTSYNDLDLYLYDP 608
                                                                                                                                                                                                    496 YTAYYGFEK----VGYYNPTAGTWTVKVV---SYKGAAN---YQVDVVSDGSLSQSGGGN 545
                                                                                                                                                                                                                                                                                              436 KYDDYAKLTFTGSVADKGSATHTFDVSGATFVTATLYWDTGSSDIDLYLYDPNGNEVDYS 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   839
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              890 SKDELKQYKQIADYND-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121 GY-----KNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELWVKK 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    791 NKDSTDKLIQQYK-----ELQKVKESRSLTS-----DEEQEYLQVTQQLAQTFPALVK 838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              743 LLVSTLVGGAFAALG------WALESLISSFAEAKKAKDDFEQSQQTNVEAITT 790
                                                                                                                                                                                                                                  92 VTSVFTFRNASSPIKYYNVTE---TVKAVFQYGYKNIRNAIEYQV----
                                                                                                                                                                                                                                                                                                                                       41 KYQDAWK-----SIDQGVSV-TYVLAKTTYENDTGSW--GSQFKCLQVQEIERKEEDYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                64 YENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQ---Y 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      51;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6 VLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSID--QGVSVTYVLAKTT 63
                                                                AKDRKTYDI ---- FNEECVYNGEP 207
                                                                                                                 PNPNPNPTPTTDTQTFT-GSVND--YWDTSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S----HYKHVPDYCTFVFNVFCAKDRKTYDIFNEECVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GYDSQGNAILKTNKELEKAIE-----NTKEYLALKKQETRDSAKKTFEDASKE--IKK 889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MORISHITA, Mio
SHIMOJO, Tomoko
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ASADA, Kiyozo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                        -----LNITDTLIFTDGELCDVFYVPNADQGCELWVKKSHYKHVPDYCTFVFNVFC 187
                                                                                                                                                                                                                                                                                                                                                                                                   7.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7.4%;
23.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   27;
                                                                                                                                                                                                                                                                                                                                                                                   20;
                                                                                                                                                                                                                                                                                                                                                                                                     Score 81; DB 14; Length 659; Pred. No. 4.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 83; DB Pred. No. 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              --KGRPKWDLIADDDDY 920
```

62;

Indels

70;

Gaps

91

------GGG- 136

TETMNVNS

```
; LENGTH; 914
TYPE: PRT
; ORGANISM; Haemophilus influenzae
US-10-043-944-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 13
US-10-043-344-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   문
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ঠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; LENGTH: 913
; TYPE: PRT
; ORGANISM: Haemophilus influenzae
US-10-043-344-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-043-344-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 5, Application US/10043344 Publication No. US20030088086A1 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                      GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 11, Appropriate Publication No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match 7.1%; Score 79.5; Best Local Similarity 21.9%; Pred. No. 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SOFTWARE: PatentIn Ver. SEQ ID NO 5
                                                                                SEQ ID NO 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                            CURRENT APPLICATION NUMBER: US/10/043,344
CURRENT FILING DATE: 2002-07-01
PRIOR APPLICATION NUMBER: 08/649,518
PRIOR FILING DATE: 1996-05-17
NUMBER OF SEQ ID NOS: 160
                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                           APPLICANT: LOOSMOTE, Sheena M. APPLICANT: Harkness, Robin E. APPLICANT: Schryvers, Anthony B.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION NUMBER: 08/
PRIOR FILING DATE: 1996-05-17
NUMBER OF SEQ ID NOS: 160
                                                                                                                                                                                                                      APPLICANT: MUTGIN, ANDREW D.
APPLICANT: K1611, MICHG1 H.
TITLE OF INVENTION: TRANSBERRIN RECEPTOR GENES
FILE REFERENCE: 1038-1221 MIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CURRENT APPLICATION NUMBER: US/10/043,344
CURRENT FILING DATE: 2002-07-01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Murdin, Andrew D.
APPLICANT: Klein, Michel H.
TITLE OF INVENTION: TRANSFERRIN RECEPTOR GENES
FILE REFERENCE: 1038-1221 MIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: LOOSMORE, Sheena M. APPLICANT: Harkness, Robin E.
                                                                                                   SOFTWARE: PatentIn Ver.
                                                                                                                                                                                                                                                                                   APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      647
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  593 YVDLGLGMRYDVSRTKANESTI-----SVGKFKNFSWNTGIVIKPTEWLDLSYRLS-TGF 646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             156 VPNADQGCELWVKKSHYKHVPD--YCTFVFNVFCAKDRK 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11 FVSAALATQAETTSAKAGENPLWAHEELLGKYQD-AWKS-----IDQGVSVTYVLAKTTY 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 48; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ---YRNLIAFAEELSKNGTTGKGNYGYHNAQNAKLV----GVNITAQLDFNG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PIKYYNVTETVKAVFQ-----YGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFY 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RNPSFAEMYGWRYGGKDTDVYIGKFK----PETSRNQEFGLALKGDFGNIEISHFSNA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EN------DTGSWGSQFKCLQVQEIERKEE-----DYTVTSVFTFRNASS 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -----LW-----KRIPYGWYATFAYNRVKVKDQK 769
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chong, Pele
Gray-Owen, Scott
                                                                                                                                                                                                                                                                                                       Chong, Pele
Gray-Owen, Scott
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Schryvers, Anthony B
                                                                                                                                                                                                                                                                                                                                                                                                                           Application US/10043344
D. US20030088086A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              08/649,518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          32; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DB 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     745
```

```
RESULT 15
US-10-043-344-9
; Sequence 9, Application US/10043344
; Publication No. US20030088086A1
                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                   밁
                                                                                                                                                                         Š
                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 14
US-10-043-344-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; ORGANISM: Haemophilus influenzae US-10-043-344-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQ ID NOS: 160
SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 7, Application US/10043344 Publication No. US20030088086A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Murdin, Andrew D.
APPLICANT: Klein, Michel H.
TITLE OF INVENTION: TRANSFERRIN RECEPTOR GENES
FILE REFERENCE: 1038-1221 MIS
CURRENT APPLICATION NUMBER: US/10/043,344
CURRENT FILING DATE: 2002-07-01
PRIOR APPLICATION NUMBER: 08/649,518
PRIOR APPLICATION NUMBER: 08/649,518
PRIOR FILING DATE: 1396-05-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: LOOSMOTE, Sheena M. APPLICANT: Harkness, Robin E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                6.7%; Score 75; DB 15; Length 912; Local Similarity 21.6%; Pred. No. 32; les 47; Conservative 32. Vic.
                                                                                                                                   745
                                                                                                                                                                                                                                                                                                      647 RNPSFSEMYGWRYGGKNDEVYVGKFK----PETSRNQEFGLALKGDFGNIEISHFSNA-- 700
                                                                                                                                                                                                                                                                                                                                                                                       593 YVDLGLGIRYDVSRTKANESTI-----SVGKFKNFSWNTGIVIKPTEWLDLSYRLS-TGF 646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           153 VFYVPNADQGCELWVKKSHYKHVPD--YCTFVFNVFCAKDRK 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     698 HFSNAYRNLIAFAEELNKNGTGKA--NYGYHNAQNAKLV----GVNITAQLDFNG-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         642 YRLSTGFRNPSFAEMYGWRYGGNNSEVYVGKFK----PETSRNQEFGLALKGDFGNIEIS 697
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        595 YVDLGLGIRYDVSRTKANESTI-----SVGKFKNFSWN-----TGIVIKPTEWLDLS 641
                                                                                                                                                                                                                     701 ---YRNLIAFAEELSKNGTGKGNYGYHNAQNAKLV----GVNITAQLDFNG
                                                                                                                                                                                                                                                          104 PIKYYNVTETVKAVFQ------YGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYV 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              64 YENDTG-----SWG-----SQFKCLQVQEIERKEE------DYTVTSVF 96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11 FVSAALATQAETTSAKAGENPLWAHEELLGKYQD-AWKSIDQGVSVTYVLAKTT-----
                                                                                                                                                                                                                                                                                                                                              65 ENDTGS------WGSQFKCLQVQEIERKEE------DYTVTSVFTFRNASS 103
                                                                                                                                                                                                                                                                                                                                                                                                                               11 FVSAALATQAETTSAKAGENPLWAHEELLGKYQD-AWKS-----IDQGVSVTYVLAKTTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          912
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TFRNASSPI----KYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDGELCD 152
                                                                                                                                                                         PNADQGCELWVKKSHYKHVPD--YCTFVFNVFCAKDRK 192
                                                                                                                                   -----LW-----KRIPYGWYATFAYNQVKVKDQK 768
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Chong, Pele
Gray-Owen, Scott
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Schryvers, Anthony B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----LW-----KRIPYGWYATFAYNRVKVKDQK 770
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6.8%;
23.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; Score 77; DB; Pred. No. 20; 24; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15; Length 914;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels 78;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                               64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63
                                                                                                                                                                                                                       744
```

```
APPLICANT: LOOSMOTE, Sheena M.
APPLICANT: Harkness, Robin E.
APPLICANT: Schryvers, Anthony B.
APPLICANT: Chong, Pele
APPLICANT: Chong, Pele
APPLICANT: Gray-Owen, Scott
APPLICANT: Murdin, Andrew D.
APPLICANT: Klein, Michel H.
TITLE OF INVENTION: TRANSFERRIN RECEPTOR GENES
FILE REFERROE: 1038-1221 MIS
CURRENT APPLICATION NUMBER: US/10/043,344
CURRENT APPLICATION NUMBER: 08/649,518
PRIOR APPLICATION NUMBER: 08/649,518
PRIOR APPLICATION NUMBER: 08/649,518
PRIOR APPLICATION NUMBER: 08/649,518
PRIOR PILING DATE: 1996-05-17
NUMBER OF SEO ID NOS: 160
SOFTWARE: Patentin Ver. 2.1
SEO ID NO
SEO ID NO
SEO ID NO
SEO ID NOS: Haemophilus influenzae
US-10-043-344-9
                                                                                                                                                                                                                                                                        δÃ
        밁
                                                   Ş
                                                                                                                밁
                                                                                                                                                                 Qy
                                                                                                                                                                                                                          DЬ
                                                                                                                                                                                                                                                                                                                                       망
                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 6.7%; Score 75; DB 15; Length 912; Best Local Similarity 21.6%; Pred. No. 32; Matches 47; Conservative 33; Mismatches 60; Indels 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GENERAL INFORMATION:
745 -----LW-----KRIPYGWYATFAYNQVKVKDQK 768
                                                                                                                                            104 PIKYYNVTETVKAVFQ-----YGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYV 156
                                                                                                                                                                                                                    647 RNPSFSEMYGWRYGGKNDEVYVGKFK----PETSRNQEFGLALKGDFGNIEISHFSNA-- 700
                                                                                                                                                                                                                                                                                                                               593 YVDLGLGIRYDVSRTKANESTI-----SVGKFKNFSWNTGIVIKPTEWLDLSYRLS-TGF 646
                                                157 PNADQGCELWYKKSHYKHVPD--YCTFVFNVFCAKDRK 192
                                                                                                       701 ---YRNLTAFAEELSKNGTGKGNYGYHNAQNAKLV----GVNITAQLDFNG----- 744
                                                                                                                                                                                                                                                                        11 FVSAALATQAETTSAKAGENPLWAHEELLGKYQD-AWKS-----IDQGVSVTYVLAKTTY 64
                                                                                                                                                                                                                                                                                                                                                                                                                                            60; Indels 78; Gaps
```

Search completed: August 4, 2003, 17:26:02 Job time: 53 secs

```
Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9n.:
         Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
       seq
seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DRET 6
1125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Issued_Patents_AA:*
1: /cgn2_6/ptodata/1/laa/5A_COMB.pep:*
2: /cgn2_6/ptodata/1/laa/5B_COMB.pep:*
3: /cgn2_6/ptodata/1/laa/6A_COMB.pep:*
4: /cgn2_6/ptodata/1/laa/6B_COMB.pep:*
5: /cgn2_6/ptodata/1/laa/PCTUS_COMB.pep:*
5: /cgn2_6/ptodata/1/laa/backfiles1.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           328717 seqs, 42310858 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     August 4, 2003, 17:13:11; Search time 29 Seconds (without alignments) 304.930 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 MKMQVVLLLTFVSAALATQA.....DRKTYDIFNEECVYNGEPWL
    6666666667777777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  77778
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GenCore version 5.1.6
Copyright (c) 1993 - 2003 Compugen Ltd.
       8.8.6.8.8.8.8.9.9.9.1.1.1.1.1.1.1.2.2.2.2.2.2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length
       20285
4907
6559
6559
9133
913
913
913
913
913
913
914
914
914
914
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           멂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gapext 0.5
                US-07-807-022A-1
US-09-107-532A-5279
US-09-108-375-2
US-08-894-818B-1
US-08-894-818B-5
US-08-445-472-12
US-08-478-435-5
US-08-478-373-5
US-08-478-373-5
US-08-483-577A-5
US-08-637-654-5
US-08-637-654-5
US-08-637-654-5
US-08-637-654-5
US-08-637-654-5
US-08-637-654-5
US-08-637-634-5
US-08-637-634-5
US-08-637-634-5
US-08-637-634-5
US-09-502-831-1
US-09-502-831-1
US-09-328-352-8058
US-08-478-373-11
US-08-478-373-11
US-08-478-373-11
US-08-478-373-11
US-08-483-577A-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Description
sequence
seq
2, Appli
5, Appli
12, Appli
5, Appli
1, Appli
1,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1, Appli
5279, Ap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   209
```

Ş

Query Ma Best Loc Matches	RESULT 1 Sequence 1, Appleant No. 53 GENERAL INFOLICANT: APPLICANT: COUNTRY: COUNTRY: COMPUTER RESTATE: COMPUTER RESTATE: COMPUTER RESTATE: APPLICATION APPLICATION COMPUTER RESTATE: APPLICATION SOFTWARE: APPLICATION CLASSIFIC ATTORNEY/AP REGISTRAN REGISTRAN REGISTRAN REFERENCE TELEX: INFORMATION E SEQUENCE TELEX: INFORMATION TELEPHONI TELETAN: TELEX: INFORMATION TOPPOLOGY: STRANDED TOPOLOGY: HOLD TOPOLOGY: SOCUENCE TIME TOPOLOGY: COMPUTER RETERMONI TELETAN: TYPE: AND TOPOLOGY: COMPUTER RETERMONI TELETAN: TYPE: AND TOPOLOGY: COMPUTER TYPE: AND TYPE: A	444443333333328 544323376
atch cal Simi 46;	1, APPLI 1, APPLI 1, APPLI 1, APPLI 1, APPLI 2, ANT: WANT: WATING TO BE WATING TO BE WATING TO BE WATING DATE 20 PART: WATING DATE 21 PART: WATING DATE 22 PART: WATING DATE 23 PART: WATING DATE 24 PART: WATING DATE 25 PART: WATING DATE 26 PART: WATING DATE 27 PART: WATING DATE 28 PART: WATING DATE 29 PHONE: PART: WATING DATE 21 PART: WATING DATE 22 PART: WATING DATE 23 PART: WATING DATE 24 PART: WATING DATE 25 PART: WATING DATE 26 PART: WATING DATE 27 PART: WATING DATE 28 PART: WATING DATE 29 PHONE: PART: WATING DATE 21 PART: WATING DATE 21 PART: WATING DATE 21 PART: WATING DATE 21 PART: WATING DATE 22 PART: WATING DATE 23 PART: WATING DATE 24 PART: WATING DATE 25 PART: WATING DATE 26 PART: WATING DATE 27 PART: WATING DATE 27 PART: WATING DATE 28 PART: WATING DATE	76.5 76.5 76.5 75.5 75 75 75 75 75 75 75
larity Conserva	A-1 Application US 5321010 FORMATION: T: Connolly, T T: Neeper, Mic T: Patchard New Jersey V: USA New Jersey V: USA New Jersey V: USA TYPE: Floppy ER: IBM PC COM READABLE FORM: TYPE: Floppy ER: IBM PC COM TING SYSTEM: PA AFION NUMBER: DATE: 1991121 AFICATION: 514 /AGENT INFORMAT PAIR, RICHARD VAGENT INFORMAT PART, RICHARD VAGENT INFOR	66666666666666666666666666666666666666
8.1%; 20.8%; ative	Truck Addition of the control of the	914 914 406 406 1179 912 912 912 912 912 912 912 33 913 34 34 34 34 34 34 34 34 34 3
Sco Pro 33;	77022A M. for ts to nc. nc. 11e 11e 11e 11e 1810 1811	US-08- US-08- US-09- US-09- US-09- US-08- US
ore 91; DB ed. No. 0.0 Mismatches	Inhibiting Collagen 0, Version 022A	08-649-518-11 08-434-881-2 08-977-771-2 09-361-752-6376 09-107-5328-514 09-107-5328-514 09-107-5328-514 08-487-8908-7 08-487-8908-7 08-483-7 08-483-7 08-478-373-7 08-478-373-7 08-478-373-7 08-474-671-7 08-474-671-7 08-483-5778-7
1; 61; 82		1-11 2 2 3 4419 4419 4419 7 7 7 7 7
ength.	#1.25	
202; ls 60;	T1	sequence
Gaps		1222 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
11		Appli föpli

```
В
                               Q
                                                                                                                       LOCATION: (B) LOCATION 1...

SEQUENCE DESCRIPTION: SEQ ID NO: US-09-107-532A-5279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 2
US-09-107-532A-5279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                              Best
                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Patent NO. 6583275
GENERAL INFORMATION:
APPLICANT: Lynn
                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 5279, Application US/09107532A
                                                                                                                                                                                                                                                                                                                              INFORMATION FOR SEQ ID NO:
                                                                              госат
                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: 60/085,598
FILING DATE: 14 May 1998
APPLICATION NUMBER: 60/051571
FILING DATE: July 2, 1997
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US/09/107,532A FILING DATE: 30-Jun-1998 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                   TOPOLOGY: linear MOLECULE TYPE: protein HYPOTHETICAL: YES
                                                                                                                                                                                                                                                                                                                                                        TELECOMMUNICATION INFORMATION:
TELEPHONE: (781)893-5007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQUENCES: 7310
CORRESPONDENCE ADDRESS:
ADDRESSEE: GENOME THERAPEUTICS CORPORATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Lynn A Doucette-Stamm
TITLE OF INVENTION: NUCLEIC ACID
ENTEROCOCCUS
                                                                                                                                                                                                                       ORIGINAL SOURCE:
                                                                                                                                                                                                                                                                                                              SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER READABLE FORM:
                                                                                                                                                                                        FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        105 IKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYV------
      15
                              26 KAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYEND--TGSWGSQFKCLQVQEI 83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62
                                                                 47;
                                                                              Similarity
 KFPEGFLWGGATAANQCEGAWDVDEKGLSVSDVY---TFDSDLPKEKWTDQWHMMTHQQV
                                                                                                                                                                                                       ORGANISM: Enterococcus faecium
                                                                                                                                                                                                                                                                                                                                              TELEFAX: (781)893-8277
                                                                                                                                                                                                                                                                                                                                                                                      NAME: Ariniello, Pamela Deneke
REGISTRATION NUMBER: 40,489
REFERENCE/DOCKET NUMBER: GTC-012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QNLKNACEMWATANDANSVNSIAACEVVYQRRCNPNNSVDD 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PNADQGCELWVKKSHYKHVPDY - - CTFVFNVFCAKDRKTYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RTYWVD----GKRSLCRYGTVLKRDKANHRIEQIMGSYDESQETYTKTKVYITTRLGRSG 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTYENDTGSWGSQFKCL------QVQEI----ERKEEDYTVTSVF-TFRNASSP 104
                                                                                                                                                                                                                                                                                TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OPERATING SYSTEM: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER: PC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STATE: Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KLAILAVCVFISTVSSVPTSDTSEE------EDLNTKNRDIWKTYSK--SKVFWLLR 49
                                                                                                                                                                        NAME/KEY:
                                                                                                                                                                                                                                                                                              LENGTH: 497 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: ASCI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDIUM TYPE: CD/ROM ISO9660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ITY: Waltham
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -MGVSLQGYNH--TGIEYK------MIYDDDQGCAILKVTKDNRNQP 147
                                                                                                                                                                        misc_feature
                                                                            7.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Beaver Street
                                                                                                                                                                                                                                                                                                                              5279:
                                                              29;
                                                                            Score 84.5;
Pred. No. 1
                                                              Mismatches
                                                                                                                                                            . 497
                                                                                                                                            5279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FAECIUM FOR DIAGNOSTICS AND THERAPEUTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       and David Bush
AND AMINO ACID SEQUENCES RELATING
                                                                                          DB 4;
                                                               85
;
                                                                                          Length 497;
                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             195
                                                              47;
                                                              Gaps
   71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        156
                                                              9;
                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                      Q
                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                 οy
                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 3
US-09-308-375-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                  US-08-894-818B-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQ ID NO 2
LENGTH: 2285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 2, Application Patent No. 6300117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NUMBER OF SEQ ID NOS:
SOFTWARE: FastSEQ for
                                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LENGTH: 22
TYPE: PRT
                                                                                                                                                       APPLICANT:
                                                                                                                          APPLICANT:
                                                                                                                                        APPLICANT:
                                                                                                                                                                                     APPLICANT:
               STREET:
                              ADDRESSEE:
                                                                                                                                                                                                                                                                                                             068
                                                                                                                                                                                                                                                                                                                                           170
                                                                                                                                                                                                                                                                                                                                                                         839
                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                84
Washington
```

```
; ORGANISM: Bacillius subtilis US-09-308-375-2
                                                                                                                                                                                                                                                                                                           Sequence 1, Application US/08894818B Patent No. 6261822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CURRENT APPLICATION NUMBER: US/09/308,375
CURRENT FILING DATE: 1999-05-14
EARLIER APPLICATION NUMBER: EP9719636.4
EARLIER FILING DATE: 1997-09-15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: Genencor International, Inc.
TITLE OF INVENTION: Proteases From Gram-Positive Organisms
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILE REFERENCE: GC394-PCT
                                            NUMBER OF SEQUENCES: 4
                                                                                         APPLICANT: TSUNASAWA, Susumu
APPLICANT: KATO, Ikunoshin
TITLE OF INVENTION: HYPERTHERMOSTABLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            791 NKDSTDKLIQQYK-----ELQKVKESRSLTS-----DEEQEYLQVTQQLAQTFPALVK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          743 LLVSTLVGGAFAALG------WALESLISSFAEAKKAKDDFEQSQQTNVEAITT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              64 YENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQ---Y 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       6 VLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSID--QGVSVTYVLAKTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                        SKDELKQYKQIADYND----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GYDSQGNAILKTNKELEKAIE------NTKEYLALKKQETRDSAKKTFEDASKE--IKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GY------KNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELWVKK 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         YVRFAETVFKRYKNKVKYWMTFNEINCV 206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KAAQDP---NSKYYYPKRHGNDFYHHFKEDIRLFAEMGFKCYRMSIAW--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S-----HYKHVPDYCTFVFNVFCAKDRKTYDIFNEECVY 203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTL 143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     YCTFVFNVFCAKDRKT--YDIFNE-ECV 202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IFPHGDEETPNEAGLFFYDQVFDECLKYGIEPVVSLSHYEMPLYLVTEYGGWPNRKLIQF 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IF-----TDGELCDVFYVPNADQ----GCELWVKKSHY---
419 Seventh Street N.W.,
                                                                                                                                                              ASADA, Kiyozo
                                                                                                                                                                                                               MORISHITA, Mio
YAMAMOTO, Katsuhiko
                                                                                                                                                                                    MITTA, Masanori
                                                                                                                                                                                                                                                              TAKAKURA, Hikaru
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                        Browdy and Neimark
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        for Windows Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               23.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US/09308375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 83;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        -KGRPKWDLIADDDDY 920
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NO.
  Ste.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB
. 16;
                                                                                              PROTEASE GENES
  300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 2285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KHVPD 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -TR 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               838
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             790
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         63
```

```
RESULT 5
US-08-894-818B-5
; Sequence 5, Applicat
; Patent No. 6261822
                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                 õ
                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-08-894-818B-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEFAX: (202) 737-3528 INFORMATION FOR SEQ ID NO: 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: amino acid
STRANDEDNESS: sing
TOPOLOGY: linear
MOLECULE TYPE: pepti
                                                                                                                                                          APPLICANT:
                                    APPLICANT: TSUNASAWA, Susumu
APPLICANT: KATO, Ikunoshin
TITLE OF INVENTION: HYPERTHERMOSTABLE
NUMBER OF SEQUENCES: 42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION DATA:
                              CORRESPONDENCE ADDRESS
                                                                                                            APPLICANT:
                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELECOMMUNICATION INFORMATION: TELEPHONE: (202) 628-5197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR APPLICATION DATA:
APPLICATION NUMBER: JP 323285/1995
FILING DATE: 12-DEC-1995
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME: Browdy, Roger L. REGISTRATION NUMBER: 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER: PCT/:
FILING DATE: 07-NOV-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COUNTRY:
               ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STATE: D.C.
                                                                                                                                                                                                                                                                                                        584 GATKITGDLTFDTSYNDLDLYLYDP 608
                                                                                                                                                                                                                                                                                                                                                                                                                                    496 YTAYYGFEK----VGYYNPTAGTWTVKVV---SYKGAAN---YQVDVVSDGSLSQSGGGN 545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  436 KYDDYAKLTFTGSVADKGSATHTFDVSGATFVTATLYWDTGSSDIDLYLYDPNGNEVDYS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                41 KYQDAWK-----SIDQGVSV-TYVLAKTTYENDTGSW--GSQFKCLQVQEIERKEEDYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  92 VTSVFTFRNASSPIKYYNVTE---TVKAVFQYGYKNIRNAIEYQV------GGG- 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ch 7.2%; Score 81; DB 3; Length 659; l Similarity 25.9%; Pred. No. 4.2; 53; Conservative 20; Mismatches 62; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20004
                                                                                                                                                                                                                                                                                                                                   AKDRKTYDI----FNEECVYNGEP 207
                                                                                                                                                                                                                                                                                                                                                                      PNPNPNPNPTPTTDTQTFT-GSVND--YWDTSD
                                                                                                                                                                                                                        Application US/08894818B
                                                                                                                                                                                                                                                                                                                                                                                                    -----LNITDTLIFTDGELCDVFYVPNADQGCELWVKKSHYKHVPDYCTFVFNVFC 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      659 amino acids
3: Browdy and Neimark
419 Seventh Street N.W.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    United States
                                                                                                            MITTA, Masanori
ASADA, Kiyozo
                                                                                                                                           MORISHITA, Mio
YAMAMOTO, Katsuhiko
                                                                                                                                                                         TAKAKURA, Hikaru
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PatentIn Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        20-MAY-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PCT/JP96/03253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US/08/894,818B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          25,618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of America
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TAKAKURA-1
Ste.
                                                               PROTEASE
 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    495
                                                                                                                                                                                                                                                                                                                                                                      583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  91
                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                   멍
                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                              APPLICANT:
                                                                                                              APPLICANT:
                                                                                                                             APPLICANT:
NUMBER OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local
```

```
US-09-445-472-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-08-894-818B-5
                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                             Sequence 12, Application US/09445472 Patent No. 6358726
                                                                           CURRENT APPLICATION NUMBER: US/09/445,472 CURRENT FILING DATE: 1999-12-06
                                                                                                                 TITLE OF INVENTION: SYSTEM FOR EXPRPESSING FILE REFERENCE: TAKAKURA-6
                                                                                                                                                                                                                                     APPLICANT: TAKAKURA, Hikaru
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX: (202) 737-35 INFORMATION FOR SEQ ID NO:
                                 PRIOR APPLICATION NUMBER: 151969/1997 PRIOR FILING DATE: 1997-06-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE CHARACTERISTICS:
LENGTH: 659 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION DATA:
APPLICATION NUMBER: JP 3:
FILING DATE: 12-DEC-1995
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION DATA:
APPLICATION NUMBER: FILING DATE: 07-NOV-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: PatentIn Relaction CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MOLECULE TYPE: peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRANDEDNESS:
TOPOLOGY: 1ir
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME: Browdy, Roger L. REGISTRATION NUMBER: 25,618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: FILING DATE: 20-MAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   546
                                                                                                                                                                                                                                                                                                                                                                                                       584 GATKITGDLTFDTSYNDLDLYLYDP 608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   496 YTAYYGFEK----VGYYNPTAGTWTVKVV---SYKGAAN---YQVDVVSDGSLSQSGGGN 545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   436 KYDDYAKLTFTGSVADKGSATHTFDVSGATFVTATLYWDTGSSDIDLYLYDPNGNEVDYS 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           92 VTSVFTFRNASSPIKYYNVTE---TVKAVFQYGYKNIRNAIEYQV-------GGG- 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         41 KYQDAWK-----SIDQGVSV-TYVLAKTTYENDTGSW--GSQFKCLQVQEIERKEEDYT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          7.2%;
1 Similarity 25.9%;
53; Conservation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              20004
                  SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  D.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                         AKDRKTYDI----FNEECVYNGEP 207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PNPNPNPTPTTDTQTFT-GSVND--YWDTSD
                                                                                                                                                         ASADA, Kiyozo
KATO, Ikunoshin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -----LNITDTLIFTDGELCDVFYVPNADQGCELWVKKSHYKHVPDYCTFVFNVFC 187
                                                                                                                                                                                               MORISHITA, Mio
SHIMOJO, Tomoko
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PatentIn Release #1.0, Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 United States
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              07-NOV-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20-MAY-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     single
version 3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        737-3528
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             628-5197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JP 323285/1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US/08/894,818B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PCT/JP96/03253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 of America
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TAKAKURA-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 81; DB 3; Length 659; Pred. No. 4.2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                        HYPERTHERMOSTABLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TFTMNVNS 583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 7
US-08-487-890A-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; LENGTH: 659
; TYPE: PRT;
; ORGANISM: Thermococcus celer
US-09-445-472-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 5
Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 12
LENGTH: 659
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
               TELEFAX: (416) 595-11 INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                              APPLICATION NUMBER: US 01 FILING DATE: 29-DEC-1993 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                  COUNTRY: Canada
ZIP: M5G 1R7
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
TITLE OF I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT:
                                               TELECOMMUNICATION INFORMATION: TELEPHONE: (416) 595-1155
                                                                                                                                 FILING DATE: 08-NOV-1993 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                               PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                  SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                REFERENCE/DOCKET NUMBER: 103
                                                                                                                                                                                                                                                                                                                                   COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                              NAME: Stewart, Michael I REGISTRATION NUMBER: 24,
                                                                                                                                                                                                                                                                      APPLICATION NUMBER: US/0 FILING DATE: 07-JUN-1993
                                                                                                                                                                  APPLICATION NUMBER:
                                                                                                                                                                                                                                                        CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               436 KYDDYAKLTFTGSVADKGSATHTFDVSGATFVTATLYWDTGSSDIDLYLYDPNGNEVDYS 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 584 GATKITGDLTFDTSYNDLDLYLYDP 608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 546 PNPNPNPTPTTDTQTFT-GSVND--YWDTSD-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                496 YTAYYGFEK----VGYYNPTAGTWTVKVV---SYKGAAN---YQVDVVSDGSLSQSGGGN 545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                92 VTSVFTFRNASSPIKYYNVTE---TVKAVFQYGYKNIRNAIEYQV------GGG- 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  41 KYQDAWK-----SIDQGVSV-TYVLAKTTYENDTGSW--GSQFKCLQVQEIERKEEDYT 91
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Toronto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                        Ontario
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Application US/08487890A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AKDRKTYDI ----FNEECVYNGEP 207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----LNITDTLIFTDGELCDVFYVPNADQGCELWVKKSHYKHVPDYCTFVFNVFC 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       INVENTION: Transferrin Receptor Genes SEQUENCES: 147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   E: Sim & McBurney
6th Floor, 330 Unviersity Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Murdin,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gray-Owen, Scottang, Yang, Yang-Ping
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Klein, Michel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chong, Pele
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Schryvers,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Harkness, Robin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          loosmore, Sheena
                               595-1163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Andrew
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7.2%; Score 81; DB 4; Length 659 25.9%; Pred. No. 4.2;
                                                                                                                                                                                                                                                                                      US/08/487,890A
                                                                                                                                                                  US 08/148,968
                                                                                                                                                                                                                   US 08/175,116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Scott
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Anthony
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20; Mismatches
                                                                                1038-466 MIS:jb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   62;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -TETMNVNS 583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
```

```
Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 8
US-08-478-435-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-08-487-890A-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 5, App. --+ No. 5922327
                                                                                                                                                                                                                                                                                                                                                   COUNTRY:
ZIP: M5G 1R7
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
MEDIUM TYPE: IBM PC compatible
TWETEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Patent No. 5922323
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local Similarity
Matches 48; Conserv
                                                                                                                                                PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/337,483
FILING DATE: 08-NOV-1994
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION UNMBER: US 08/175,116
FILING DATE: 29-DEC-1993
                                                                                                                                                                                                                                                                                                      OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/478,435
FILING DATE: 07-JUN-1995
                                                                                            FILING DATE: 29-DEC-
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 1
FILING DATE: 08-NOV-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Murdin, Andrew
APPLICANT: Klein, Michel
TITLE OF INVENTION: Transferrin Receptor Genes
TELECOMMUNICATION INFORMATION:
                                                                       ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                   NAME: Stewart, Michael REGISTRATION NUMBER: 2
                                                                                                                                                                                                                                                                                      CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STREET: Suite
CITY: Toronto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: amino acid
STRANDEDNESS: sir
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LENGTH:
                   REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         647
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          156 VPNADQGCELWVKKSHYKHVPD--YCTFVFNVFCAKDRK 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               104 PIKYYNVTETVKAVFQ-----YGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFY 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  593 YVDLGLGMRYDVSRTKANESTI-----SVGKFKNFSWNTGIVIKPTEWLDLSYRLS-TGF 646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11 FVSAALATQAETTSAKAGENPLWAHEELLGKYQD-AWKS----IDQGVSVTYVLAKTTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          65 EN------DTGSWGSQFKCLQVQEIERKEE------DYTVTSVFTFRNASS 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ---YRNLIAFAEELSKNGTTGKGNYGYHNAQNAKLV----GVNITAQLDFNG-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RNPSFAEMYGWRYGGKDTDVYIGKFK----PETSRNQEFGLALKGDFGNIEISHFSNA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Application US/08478435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ontario
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Suite 701, 330 University Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               913 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gray-Owen, Scott
Yang, Yan-Ping
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Chong, Pele
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Schryvers,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Harkness, Robin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Loosmore, Sheena
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -----LW-----KRIPYGWYATFAYNRVKVKDQK 769
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sim & McBurney
                                                                                              08-NOV-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             7.1%;
21.9%;
                                                                                                              US 08/148,968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Anthony
                             24,973
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             32;
                 1038-462 MIS:vg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 79.5; D
Pred. No. 9.9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ۳.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     64
```

```
COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/337,483
FILING DATE: 08-NOV-1994
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: Stewart, Michael I
RREGISTRATION NUMBER: 1038-410 MIS:jb
TELECOMMUNICATION INFORMATION:
TELEPHONE: (416) 595-1155
TELEFAX: (416) 595-1153
INFORMATION TOR SEQ ID NO: 5:
SEQUENCE CHARACTERSTICS:
LENGTH: 913 amino acids
TYPE: amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; TOPOLOGY: linear US-08-478-435-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEPHONE: (416) 595-1153
TELEFAX: (416) 595-1163
INFORMATION FOR SEQ ID NO: 5:
SEQUENCE CHARACTERISTICS:
LENGTH: 913 amino acids
TYPE: amino acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 5, Appli
Patent No. 592256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match 7.1%; Score 79.5; DB 2; Best Local Similarity 21.9%; Pred. No. 9.9; Matches 48; Conservative 32; Mismatches 60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQUENCES: 147
CORRESPONDENCE ADDRESS:
ADDRESSEE: Sim & MCPUTTOCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Murdin, Andrew APPLICANT: Klein, Michel TITLE OF INVENTION: Trans
                                                                                                                                                                                                                                                                                                                                                                                    ZIP: M5G 1R7
                                                                                                                                                                                                                                                                                                                                                                                                                                                     CITY: Toronto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                  STATE: Ontario
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         104 PIKYYNVTETVKAVFQ------YGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFY 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           647 RNPSFAEMYGWRYGGKDTDYYIGKFK----PETSRNQEFGLALKGDFGNIEISHFSNA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  593 YVDLGLGMRYDVSRTKANESTI-----SVGKFKNFSWNTGIVIKPTEWLDLSYRLS-TGF 646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VPNADQGCELWVKKSHYKHVPD--YCTFVFNVFCAKDRK 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ---YRNLIAFAEELSKNGTTGKGNYGYHNAQNAKLV----GVNITAQLDFNG------ 745
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EN------DTGSWGSQFKCLQVQEIERKEE-----DYTVTSVFTFRNASS 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----LW-----KRIPYGWYATFAYNRVKVKDQK 769
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Schryve...
Chong, Pele
Gray-Owen, Scott
Yang, Yan-Ping
Yandin, Andrew
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Application US/08337483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SE: Sim & McBurney
Suite 701, 330 Unviersity Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Schryvers, Anthony
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Harkness, Robin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           700
```

 	US.	ор Оу Оу Оу	US- QS- QY MM Db
COUNTRY: Canada ZIP: M5G 1R7 ZIP: M5G 1R7 COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA: APPLICATION NUMBER: US/08/478,373 FILING DATE: 07-JUN-1995 CLASSIFICATION UMBER: US 08/337,483 APPLICATION NUMBER: US 08/337,483 FILING DATE: 08-NOV-1994 CLASSIFICATION: 435	Sequence 5, Application US/08478373 Sequence 5, Application: APPLICANT: Loosmore, Sheena APPLICANT: Loosmore, Sheena APPLICANT: Chong, Pele APPLICANT: Gray-Owen, Scott APPLICANT: Murdin, Andrew APPLICANT: Murdin, Andrew APPLICANT: Klein, Michel TITLE OF INVENTION: Transferrin Receptor Genes NUMBER OF SEQUENCES: 147 CORRESPONDENCE ADDRESS: ADDRESSE: Sim 6 MCBurney STREET: Suite 701, 330 University Avenue	647 RNPSFAEMYGWRYGGKDTDYYIGKFKPETSRNQEFGLALKGDFGNIEISHFSNA 70 104 PIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFY 15	TOPOLOGY: linear 08-337-483-5 08-337-483-5 108-337-483-5 08-337-483-5 7.1%; Score 79.5; DB est Local Similarity 21.9%; Pred. No. 9.9; atches 48; Conservative 32; Mismatches 11 FVSAALATQAETTSAKAGENPLWAHEELLGKYQD-A:

```
Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 11
US-08-474-671-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-08-478-373-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity 21.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                       SOFTWARE: Patentin Relaction DATA:
                                         ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                   COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT:
TITLE OF IN
                                                                                    PRIOR APPLICATION DATA:
                                                                                                                                                               PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/337,483
FILING DATE: 08-NOV-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                             CORRESPONDENCE ADDRESS:
                                                                                                                                  PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                    APPLICATION NUMBER: US 0 FILING DATE: 29-DEC-1993
                                                                                                                                                                                                                                                                                     COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
              REGISTRATION
                                                         APPLICATION NUMBER: US 08/148,968 FILING DATE: 08-NOV-1993
                                                                                                                                                 CLASSIFICATION:
                                                                                                                                                                                                               CLASSIFICATION:
                                                                                                                                                                                                                               APPLICATION NUMBER: FILING DATE: 07-JU
                                                                                                                                                                                                                                                                                                                                                                  COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                STREET: Suite
CITY: Toronto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: amino acid
STRANDEDNESS: si
                                                                                                                                                                                                                                                                                                                     MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5, 60083
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    156 VPNADQGCELWVKKSHYKHVPD--YCTFVFNVFCAKDRK 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               104 PIKYYNVTETVKAVFQ-----YGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFY 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             647 RNPSFAEMYGWRYGGKDTDVYIGKFK----PETSRNQEFGLALKGDFGNIEISHFSNA-- 700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        593 YVDLGLGMRYDVSRTKANESTI-----SVGKFKNFSWNTGIVIKPTEWLDLSYRLS-TGF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11 FVSAALATQAETTSAKAGENPLWAHEELLGKYQD-AWKS-----IDQGVSVTYVLAKTTY 64
                                                                                                                                                                                                                                                                                                                                                       M5G 1R7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EN------DYTVTSVFTFRNASS 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ------LW-----KRIPYGWYATFAYNRVKVKDQK 769
                                                                                                                                                                                                                                                                                                                                                                                   Ontario
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Application US/08474671
                                                                                                                                                                                                                                                                                                                                                                                                                Suite 701, 330 University Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         913 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -YRNLTAFAEELSKNGTTGKGNYGYHNAQNAKLV----GVNITAQLDFNG------
                                                                                                                                                                                                                                                                        PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                   Canada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Murdin, Anarev
Klein, Michel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Schryvers, 1
Chong, Pele
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Yang, Yan-Ping
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gray-Owen,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Loosmore, Sheena
Harkness, Robin
                                                                                                                                                                                                                                                                                                                                                                                                                                Sim & McBurney
                                                                                                                                                                                                                             07-JUN-1995
single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7.18;
21.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Andrew
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Transferrin Receptor Genes
                                                                                                                  US 08/175,116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Anthony
                                                                                                                                                                                                                                          US/08/474,671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Scott
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 79.5; Di
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ВС
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        646
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 12
US-08-483-577A-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; TOPOLOGY: US-08-474-671-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 5,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEFAX: (416) 595-11 INFORMATION FOR SEQ ID NO:
                                                                                                                                             COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/483,577A
FILING DATE: 07-7UN-1995
CLASSIFICATION: 435
                                                                                                                                                                                                                                                        ZIP: M5G 1R7
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                            FILING DATE: 29-DEC-
PRIOR APPLICATION DATA:
                                                                            PRIOR APPLICATION DATA:
                                                                                                                            PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE/DOCKET NUMBER: 1038-465 MIS:vg
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
                                                                                               APPLICATION NUMBER: US 08/337,483 FILING DATE: 08-NOV-1994
                                                                                                                                                                                                                                                                                                                                        STREET: Suite
CITY: Toronto
                                                               APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                   STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRANDEDNESS:
                                                                                                                                                                                                                                                                                                               COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                 ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEPHONE:
                 APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            156 VPNADQGCELWVKKSHYKHVPD--YCTFVFNVFCAKDRK 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           104 PIKYYNVTETVKAVFQ------YGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFY 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           647 RNPSFAEMYGWRYGGKDTDVYIGKFK----PETSRNQEFGLALKGDFGNIEISHFSNA-- 700
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          593 YVDLGLGMRYDVSRTKANESTI-----SVGKFKNFSWNTGIVIKPTEWLDLSYRLS-TGF 646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11 FVSAALATQAETTSAKAGENPLWAHEELLGKYQD-AWKS-----IDQGVSVTYVLAKTTY 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ---YRNLIAFAEELSKNGTTGKGNYGYHNAQNAKLV----GVNITAQLDFNG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EN-------DTGSWGSQFKCLQVQEIERKEE------DYTVTSVFTFRNASS 103
                                                                                                                                                                                                                                                                                                                              Ontario
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Application US/08483577A
                                                                                                                                                                                                                                                                                                                                                              Suite 701,
                                                                                                                                                                                                                                                                                                                                                                                                                                        Murdin, Andre
Klein, Michel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gray-Owen, Sco
Yang, Yan-Ping
                                                                                                                                                                                                                                                                                                                Canada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Harkness,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Schryvers, Anthony
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Chong, Pele
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            loosmore,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         linear
                                                                                                                                                                                                                                                                                                                                                                                 Sim & McBurney
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (416) 595-1155
08-NOV-1993
                                               29-DEC-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             --LW-----KRIPYGWYATFAYNRVKVKDQK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5) 57
, 595-1163
, NO: 5:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       7.18;
21.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Andrew
                                                                                                                                                                                                                                                                                                                                                                                                              Transferrin Receptor Genes
160
                                                                                                                                                                                                                                                                                                                                                                330 Unviersity Avenue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Robin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sheena
                                                               US 08/175,116
               US 08/148,968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Scott
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 79.5; DE Pred. No. 9.9; 32; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            745
```

```
SEQUENCE CHARACTERISTICS:
LENGTH: 913 amino acids
LENGTH: 913 amino acids
STRANDEDNESS: single
TOPOLOGY: linear
US-08-483-577A-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME: Stewart, Michael I
REGISTRATION NUMBER: 24,973
REFERENCE, DOCKET NUMBER: 1038
TELECOMMUNICATION INFORMATION:
TELEPHONE: (416) 595-1155
TELEPAX: (416) 595-1163
INFORMATION FOR SEQ ID NO: 5:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sequence 5, Application US/08897438
Patent No. 6262016
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 7.1%; Score 79.5; DB 3; Length 913; Best Local Similarity 21.9%; Pred. No. 9.9; Matches 48; Conservative 32; Mismatches 60; Indels 7
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/483,577
FILING DATE: 07-JUN-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/337,483
FILING DATE: 08-NOV-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:
                                                                                                                                                                       COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: PS COMPATION SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/897,438
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
APPLICANT:
TITLE OF IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE OF INVENTION: Transferrin Receptor Genes
NUMBER OF SEQUENCES: 160
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                        ADDRESSEE: Sim & McBurney
STREET: 6th Floor, 330 University Avenue
CITY: Toronto
STATE: Ontario
COUNTRY: Canada
ZIP: M5G 1R7
                                                                                                                                                              FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       746
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    647 RNPSFAEMYGWRYGGKDTDVYIGKFK----PETSRNQEFGLALKGDFGNIEISHFSNA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          593 YVDLGLGMRYDVSRTKANESTI-----SVGKFKNFSWNTGIVIKPTEWLDLSYRLS-TGF 646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     104 PIKYYNVTETVKAVFQ-----YGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFY 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    11 FVSAALATQAETTSAKAGENPLWAHEELLGKYQD-AWKS-----IDQGVSVTYVLAKTTY 64 : | | : : : | | : : : | | : :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            65 EN------DTGSWGSQFKCLQVQEIERKEE------DYTVTSVFTFRNASS 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ---YRNLIAFAEELSKNGTTGKGNYGYHNAQNAKLV----GVNITAQLDFNG------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -----LW-----KRIPYGWYATFAYNRVKVKDQK 769
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VPNADQGCELWVKKSHYKHVPD--YCTFVFNVFCAKDRK 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gray-Owen, Scott
Yang, Yan-Ping
Murdin, Andrew
Klein, Michel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Chong, Pele
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Loosmore, Sheena
Harkness, Robin
Schryvers, Anthony
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1038-511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    700
```

									•																						
	•• ••		. •. •	٠. ٠.	•• ••	٠.			•• •	 		٠. ٠			. ; Se	RESULT	DЬ	Qy	DЬ	Qу	Db	Qy	рb	Qy	Quer Best Matc	08-98 1N		., ., .		٠. ٠.	٠.
APPLICATION NUMBER: US/08/637,654 FILING DATE: 05-AUG-1996 CLASSIFICATION: 435	A R	COMPUTER: IBM PC COMPSATIONE OPERATING SYSTEM: PC-DOS/MS-DOS	READABL	COUNTRY: Canada ZIP: M5G 1R7	9 5	TREET: 6th Floor,	ADDRESSEE: Sim & McBurney	H	INVENTION: HAEMO	Yang, Yan-P	APPLICANT: Grav-Owen Scott	Schryvers, Antho	APPLICANT: LOOSMOTE, Sheena M	INFORMATION:	Sequence 5, Application US/08637654	14 637-654-5	746LWKRIPYGWYATFAYNRVKVKDQK 769	156 VPNADQGCELWVKKSHYKHVPDYCTFVFNVFCAKDRK 192	701YRNLIAFAEELSKNGTTGKGNYGYHNAQNAKLVGVNITAQLDENG	YKNIRNAIEYOVGGG	647 RNPSFAEMYGWRYGGKDTDVYIGKFKPETSRNQEFGLALKGDFGNIEISHFSNA	65 ENDYTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASS	593 YVDLGLGMRYDVSRTKANESTISVGKFKNFSWNTGIVIKPTEWLDLSYRLS-TGF	PLWAHEE	Query Match 7.1%; Score 79.5; DB 3; Length 913; Best Local Similarity 21.9%; Pred. No. 9.9; Matches 48; Conservative 32; Mismatches 60; Indels 79; Gaps	TELEPHONE: (416) 595-1155 TELEPHONE: (416) 595-1163 INFORMATION FOR SEQ ID NO: 5: SEQUENCE CHARACTERISTICS: LENGTH: 913 amino acids TYPE: amino acid STRANDEDNESS: single TOPOLOGY: linear 08-897-438-5	REFERENCE/DOCKET		PRIOK APPLICATION UNMER: US 08/148,968 ETITAN DATE: 08-NOV-1002	LICATION NUME	CION DATA:

64 64 6

PRIOR APPLICATION DATA:
APPLICATION NUMBER:

PCT/CA94/00616

```
Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 15
US-08-649-518-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; TOPOLOGY: linear
US-08-637-654-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 5, APF--
Sequence 5, APF--
No. 6361779
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX: (416) 595-11 INFORMATION FOR SEQ ID NO:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/337,483
FILING DATE: 08-NOV-1994
                                                             COMPUTER: IBM PC Compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, V
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/649,518
FILING DATE: 17-MAY-1996
                                                                                                                                                                      COUNTRY: Canada
ZIP: M5G 1R7
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE CHARACTERISTICS:
LENGTH: 913 amino acids
TYPE: amino acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                               NUMBER OF SEQUENCES: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                     TITLE OF
                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                STREET: C. STREET: Toronto
                                                                                                                                                                                                                                                                                                                                                                                                        PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATTORNEY/AGENT INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                          PPLICANT:
                                                    CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Match 7.1%; Score 79.5; Di Local Similarity 21.9%; Pred. No. 9.9; es 48; Conservative 32; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REGISTRATION NUMBER: 24, REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                  ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              104 PIKYYNVTETVKAVFQ-----YGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFY 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               156 VPNADQGCELWVKKSHYKHVPD--YCTFVFNVFCAKDRK 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  647 RNPSFAEMYGWRYGGKDTDVYIGKFK----PETSRNQEFGLALKGDFGNIEISHFSNA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     593 YVDLGLGMRYDVSRTKANESTI-----SVGKFKNFSWNTGIVIKPTEWLDLSYRLS-TGF 646
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11 FVSAALATQAETTSAKAGENPLWAHEELLGKYQD-AWKS----IDQGVSVTYVLAKTTY 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ---YRNLIAFAEELSKNGTTGKGNYGYHNAQNAKLV----GVNITAQLDFNG--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EN------DTGSWGSQFKCLQVQEIERKEE-----DYTVTSVFTFRNASS 103
                                                                                                                                                                                                                                                                                                                                                   INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Stewart,
                                                                                                                                                                                                                                            Ontario
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Application US/08649518
                                                                                                                                                                                                                                                                             6th Floor, 330 Unviersity Avenue
                                                                                                                                                                                                                                                                                                                                                              Murdin, Andrew
Klein, Michel
                                                                                                                                                                                                                                                                                                                                                                                                    Gray-Owen, Scot
Yang, Yan-Ping
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (416)
                                                                                                                                                                                                                                                                                                                                                                                                                                        Chong, Pele
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Schryvers, Anthony
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Harkness, Robin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (416) 595-1155
(416) 595-1163
R SEQ ID NO: 5:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -----LW-----KRIPYGWYATFAYNRVKVKDQK 769
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Josmore, Sheena
                                                                                                                                                                                                                                                                                               Sim & McBurney
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Michael
                                                                                                                                                                                                                                                                                                                                                                                       Andrew
                                                                                                                                                                                                                                                                                                                                 Transferrin Receptor Genes
160
                                                                                                                                                                                                                                                                                                                                                                                                                        Scott
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     24,973
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      32; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1038-595
                                                                                                                       Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 745
```

Ĉ,

```
밁
 밁
                            δÃ
                                                                                               ρy
                                                                                                                                                                 Q
                                                                                                                                                                                                     맑
                                                                                                                                                                                                                                   8
                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                           US-08-649-518-5
                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                            TELEFAX: (416) 595-11 INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/483,577
FILING DATE: 07-JUN-1995
                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE CHARACTERISTICS:
LENGTH: 913 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FILING DATE: 08-NOV-1993
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TELEPHONE: (416) 595-1155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION DATA: APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                            STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICATION NUMBER: FILING DATE: 29-DE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME:
746
                                                                  701
                              156 VPNADQGCELWVKKSHYKHVPD--YCTFVFNVFCAKDRK 192
                                                                                                104 PIKYYNVTETVKAVFQ-----YGYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFY 155
                                                                                                                                    647 RNPSFAEMYGWRYGGKDTDVYIGKFK----PETSRNQEFGLALKGDFGNIEISHFSNA-- 700
                                                                                                                                                                                                     593 YVDLGLGMRYDVSRTKANESTI-----SVGKFKNFSWNTGIVIKPTEWLDLSYRLS-TGF 646
                                                                                                                                                                    65 EN-----
                                                                                                                                                                                                                                     11 FVSAALATQAETTSAKAGENPLWAHEELLGKYQD-AWKS-----IDQGVSVTYVLAKTTY 64
                                                                                                                                                                                                                                                                         48;
                                                                                                                                                                                                                                                                                                                                                                                            amino acid
                                                                ---YRNLIAFAEELSKNGTTGKGNYGYHNAQNAKLV----GVNITAQLDFNG--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Stewart, Michael
                                                                                                                                                                                                                                                                         Conservative
----LW-----KRIPYGWYATFAYNRVKVKDQK 769
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        29-DEC-1993
                                                                                                                                                                                                                                                                                                                                                                      single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                595-1163
                                                                                                                                                                                                                                                                                     7.1%;
21.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US 08/148,968
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US 08/175,116
                                                                                                                                                                   -DTGSWGSQFKCLQVQEIERKEE------DYTVTSVFTFRNASS 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  24,973
                                                                                                                                                                                                                                                                                                                                                                                                                                                <u>ა</u>
                                                                                                                                                                                                                                                                       32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1038-608
                                                                                                                                                                                                                                                                                     Score 79.5; D. Pred. No. 9.9;
                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                      DB 4;
                                                                                                                                                                                                                                                                       60;
                                                                                                                                                                                                                                                                                                      Length 913;
                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                       79;
```

Gaps

Search completed: August Job time: 31 secs 4, 2003, 17:18:16

```
Regult
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence:
                                                                                                                                                                                                                                                                                                                                             ecore greater than o
                                                       290.5
290.5
284.5
                                                                                                                                                                                                                                          Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A_Geneseq_19Jun03:*

1: /SIDS1/gcgdata/gen

2: /SIDS1/gcgdata/gen

3: /SIDS1/gcgdata/gen

4: /SIDS1/gcgdata/gen

5: /SIDS1/gcgdata/gen

6: /SIDS1/gcgdata/gen

6: /SIDS1/gcgdata/gen

9: /SIDS1/gcgdata/gen

9: /SIDS1/gcgdata/gen

10: /SIDS1/gcgdata/gen

10: /SIDS1/gcgdata/gen

11: /SIDS1/gcgdata/gen

12: /SIDS1/gcgdata/gen

13: /SIDS1/gcgdata/gen

13: /SIDS1/gcgdata/gen

13: /SIDS1/gcgdata/gen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      length: 0
length: 2000000000
         100.0
100.0
32.4
31.4
25.8
25.8
25.3
25.3
                                                                                                                                                                                                                                                                                                                                                      is the number of results predicted by chance to have a ster than or equal to the score of the result being printed. rived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1107863 seqs, 158726573 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DRET6
1125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              August 4, 2003, 17:13:07; Search time 83 Seconds (without alignments) 399.685 Million cell updates/sec
                                                                                                                                                                                                                                       Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 MKMQVVLLLTFVSAALATQA.....DRKTYDIFNEECVYNGEPWL
                                                                                                                                                                                                                                                                                                                                                                                                                                      SIDSI/gcgdata/geneseq/geneseqp-embl/AA1985,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1985,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1987,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1987,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1980,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1980,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1990,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1990,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1992,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1993,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1993,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1997,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1997,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1997,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1999,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1999,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1999,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA1990,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2000,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2000,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2000,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2000,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2000,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2000,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2000,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2000,DAT:

SIDSI/gcgdata/geneseq/geneseqp-embl/AA2000,DAT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1980.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1981.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1983.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp-emb1/AA1984.DAT:*
                                                                                                                                                                                                                                          Length
         209
209
203
203
190
190
198
171
                                                                                                                                                                                                                                            DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gapext 0.5
            Ħ
                            AAW37449
AAY18081
AAY18086
AAY18085
AAW37447
AAW37447
AAY18079
AAY18084
AAB74289
                                                                                                                                                                                                                                                                                                             SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1107863
Tick vasoactive am Histamine binding Histamine binding Histamine binding Tick vasoactive am Histamine binding Histamine binding Histamine binding Histacalin protein
                                                                                                                                                                                                                                     Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            209
```

79.5 79.5 79.5 79.5 79.5	000		1444400004400044
	77777777777777777777777777777777777777		222.4
913 913 913 913 716	217 2285 555 876 659 659 659	221 202 2778 254 411 437 441 917	200 200 190 190 182 172 172 172 284 285
18 19 21 21 22	118882222222222222222222222222222222222	222222222222222222222222222222222222222	119 220 220 220 220 220 220 220 220 220 22
AANX 1084 AAW08957 AAW53042 AAY51687 AAY80353 ABG04465	901245 901245 901345	149989647 14999866	AAW37448 AAY18080 AAW37446 AAW18079 AAB74290 AAB73262 AAB74288 AAB73260 AAB73260 AAW18088 AAW18088 AAW18087 AAY18089 AAY18089 AAY18089
Amino acid sequence Amino acid sequence H. Influenzae stra H. influenzae type H. influenzae type Novel human diagno	I. scapularis Salp Histamine binding Bacillus subtilis Drosophila melanog Drosophila melanog Drosophila melanog Drosophila melanog Drosophila selanog Drosophila falanog Drosophila melanog Drosophila melanog Drosophila melanog Drosophila melanog Protease. Synthet Thermococcus prote W09856926 Seq ID 1 H. pylori chaperon Bacterial transfer	0.000	ck vasoactive stamine bind ck vasoactive kasoactive tracelin prostacelin prostacelin prostacelin prostacelin prostacelin prostacelin prostacelin prostacelin prostacelin prostamine bind stamine bind stamine bind terococcus

ALIGNMENTS

RESULT 1
AAW37449
ID AAW3

AAW37449 standard;

Protein;

209

₹

Vasoactive amine binding protein; D.RET6; histamine; serotonin; assay; antihistamine; anti-inflammatory; insect bite; snake bite; scorpion bite; dermatitis; vaccine; transgenic animal; tick. Nuttall PA, Key Peptide 08-JUN-1998 (first entry) AAW37449; 18-APR-1997; 18-MAY-1996; 19-MAY-1997; 27-NOV-1997. WO9744451-A2 Dermacenter reticularis. Tick vasoactive amine binding protein D.RET6. (OXFO-) OXFORD VACS LTD. Paesen GC; 97GB-0007844 96GB-0010484 97WO-GB01372 Location/Qualifiers /label= Sig_peptide

```
RESULT 2
AAY18081
ID AAY
XX
XX
XX
AC AAY
XX
XX
DT 06--
XX
DE His
XX
KW His
KW Gru
KW ast:
KW dru
KW tis;
XX
XX
XX
OS Rhii
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VΩ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Бр
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This protein comprises tick Dermacenter reticularis (Dr) novel vasoactive amine binding protein (VABP) D.RET6. Its amino acid componence was deduced from a cDNA clone (see AAV00230) obtained componence was deduced from a cDNA library. 3 Novel VASPs, designated componence was appendiculatus have also been identified. The componence was a componence was a carrier for some sefect of allergens; (ii) for compounds; (ii) as an antihistamine or anti-inflammatory componence was a carrier for slow release of histamine-related compounds; (iv) in vaccines to protect against metazoan parasites, compounds; (iv) in vaccines to protect against metazoan parasites, compounds; (iv) in vaccines to protect against metazoan parasites, compounds; (iv) in vaccines to protect against metazoan parasites, compounds; (iv) in vaccines to protect against metazoan parasites, compounds; (iv) in vaccines to protect against metazoan parasites, compounds; (iv) in vaccines to protect against metazoan parasites, compounds; (iv) in ulcer formation or the immune response etc. Compounds and antihistamine than component of the in ulcer formation and affer than conventional antihistamine component of the conventional conventional conventional component of the c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                            Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator; respiratory disease; coronary heart disease; cellular growth regulator;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               New vasoactive amine binding proteins and related nucleic vectors - transformed cells and transgenic animals, used assaying or removing histamine and as antihistamine or
  Rhipicephalus
                                                                                                                                                                                                                         Histamine
                                                                                                                                                                                                                                                                         06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                      AAY18081 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Example 2; Fig 4; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         anti-inflammatory agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1998-018506/02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   209;
                                          repair; blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      بر
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 μ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FVFNVFCAKDRKTYDIFNEECVYNGEPWL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELWVKKSHYKHVPDYCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KTTYENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MKMQVVLLLTFVSAALATQAETTSAKAGENPLMAHEELLGKYQDAWKSIDQGVSVTYVLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FVFNVFCAKDRKTYDIFNEECVYNGEPWL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELWVKKSHYKHVPDYCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      KTTYENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MKMQVVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLA
                                                                                                                                                                                                                      binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and safer than conventional antihistamines.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%;
ilarity 100.0%;
Conservative (
                                                                                                                                                                                                                                                                      (first entry)
appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Æ,
                                                                                                                                                                                                                      protein D.RET6.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                         209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 1125; DB 19;
Pred. No. 3.9e-104;
); Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          acid,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
```

```
RRSULT 3
AAY18086
ID AAY1
XX
AC AAY1
XX
AC AAY1
XX
DT 06-2
XX
DE Hist
XX
KW Hist
KW Gasth
KW asth
                                                                                                                                                                                                      밁
                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                     망
                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                            Qy
                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used as components of vaccines directed against blood-sucking
                                                           Histamine binding
                                                                                     06-AUG-1999
                                                                                                                                        AAY18086 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ectoparasites
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Histamine and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (OXFO-) OXFORD VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                       181
                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1999-357841/30
                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1; Fig 4; 84pp;
                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                        al Similarity
209; Conser
                                                                                                                                                                                                                                                                                                                                                      ш
                                                                                                                                                                                                                                                                                                                                                                              ۱.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAX76967
                                                                                                                                                                                                                FVFNVFCAKDRKTYDIFNEECVYNGEPWL
                                                                                                                                                                                                                                                                     GYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELWVKKSHYKHVPDYCT
                                                                                                                                                                                                                                                                                                                    KTTYENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQY
                                                                                                                                                                                                                                                                                                                                                   GYKNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELWVKKSHYKHVPDYCT
                                                                                                                                                                                                                                                                                                       KTTYENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQY
                                                                                                                                                                                                      FVFNVFCAKDRKTYDIFNEECVYNGEPWL
                                                                                                                                                                                                                                                                                                                                                                                                                                                       209
                                                                                                                                                                                                                                                                                                                                                                                                   100.0%;
ilarity 100.0%;
Conservative (
                                                                                     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              serotonin binding compounds useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                       AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98GB-0013917
97GB-0025046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98WO-GB03530
                                                            protein
                                                                                                                                        Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         English.
                                                              Ih/Bm-HBP2
                                                                                                                                        203
                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                     Score 1125; DB 20;
Pred. No. 3.9e-104;
; Mismatches 0;
                                                                                                                                                                                                                            209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               for the treatment
                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          l for regulating
tion and gastric
al of histamine
                                                                                                                                                                                                                                                                                                                                                                                                       0;
                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          drug
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     be
                                                                                                                                                                                                                                                                                                                            120
```

60

Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; vaccine

```
RESULT 4
AAY18085
ID AAY1
XX
AC AAY1
XX
AC AAY1
XX
O6-A
                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                   S
                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                δ
                                                                                                                                    ₽
                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local S
Matches 75
                                                                                                                                                                                                                                                                                                                                                                                                                                                              This sequence is an example of a histamine or serotonin binding compound (A), of the invention. cDNA encoding this sequence was isolated from a mixed Boophilus microplus/Ixodes hexagonus cDNA expression library. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergies refinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking ectoparasites.
   06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Histamine and serotonin binding compounds useful for the treatment of allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 14; Fig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO9927104-A1
                                AAY18085
                                                           AAY18085 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (OXFO-) OXFORD VACS LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Boophilus microplus.
Ixodes hexagonus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         respiratory disease; coronary tissue repair; blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1999-357841/30
                                                                                                                                    183
                                                                                                                                                                 186
                                                                                                                                                                                             123
                                                                                                                                                                                                                           126
                                                                                                                                                                                                                                                        67
                                                                                                                                                                                                                                                                                    66
                                                                                                                                                                                                                                                                                                                  œ
                                                                                                                                                                                                                                                                                                                                               6
                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                    -VALGRITYNISTPNCV 198
                                                                                                                                                   FCAKDRKTYDIFNEECV 202
                                                                                                                                                                                               KNIIOWTTENNTKFNDTVVFTDGQTCDVLYIPYKEDGYELWVRSEYLQNTPTCCQFIFDL
                                                                                                                                                                                                                    RNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNADQGCELWVKKSHYKHVPDYCTFVFNV
                                                                                                                                                                                                                                                        NDS-VWGKNFTCLSVTVTSKYESTFTVEYNTTYKNQSQ--QWVSMSENVTAVQEGGY-SV
                                                                                                                                                                                                                                                                                   NDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGYKNI
                                                                                                                                                                                                                                                                                                                  VVYLTAVTAADQAPPSSTRNEPLEKTTW-HNQTLGRYQDAWKSINQSVGTTYYFLRSTYN
                                                                                                                                                                                                                                                                                                                                              VLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYE
                                                                                                                                                                                                                                                                                                                                                                                                                                        203
                                                                                                                                                                                                                                                                                                                                                                             Conservative
   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            98GB-0013917.
97GB-0025046.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              84pp; English
                                                            Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         coronary heart disease; cellular growth regulator; sucking ectoparasite; therapy.
                                                                                                                                                                                                                                                                                                                                                                                        32.4%; Score 364; DB 2
38.1%; Pred. No. 4e-28;
                                                                                                                                                                                                                                                                                                                                                                           38;
                                                            203
                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                            ₹
                                                                                                                                                                                                                                                                                                                                                                                                   20;
                                                                                                                                                                                                                                                                                                                                                                             78;
                                                                                                                                                                                                                                                                                                                                                                                                       Length 203;
                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                        122
                                                                                                                                                                                                                                                                                                                  66
```

```
Ş
                                                                                                    В
                                                                                                                                   õ
                                                                                                                                                                          밁
                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                            Query Match Best Local S
                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; asthma; urticaria; allergic rhinitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; wascine; respiratory disease; coronary heart disease; cellular growth regulator; tissue repair; blood-sucking ectoparasite; therapy.
                                                                                                                                                                                                                                                                                                                                               This sequence is an example of a histamine or serotonin binding compound (A), of the invention. cDNA encoding this sequence was isolated from a mixed Boophilus microplus/Ixodes hexagonus cDNA expression library. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rinhitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking ectoparasites.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Synthetic.
                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Histamine and serotonin binding compounds useful for the treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N-PSDB; AAX76970.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 1999-357841/30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Boophilus microplus. Ixodes hexagonus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (OXFO-) OXFORD VACS LTD
                                                                                                      60
                                                                                                                                                                                                                                                                Similarity
                                                                                                    FLRSTYNNDS-VMGKNETCLSVTVTSKHESTETVEYNTTYKNQSQ--QWVSMTENVTAVQ
                                                     MKMQVVLLLTFVSAALATQAETTSAKAG--ENPLWAHEELLGKYQDAWKSIDQGVSVTYV
                                                                                                                                     LAKTTYENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVF 118
                                                                                                                                                                            MKALLIAVGYLAAVTAAPQASPSSPRNEPLKNTTW-HSKELKNYQDAWKSINQNVSTTYY 59
CTEVENVECAKDRKTYDIENEECV
                                    EEGY-DVKNIIQWTTENNTKFNDTVVFTDGQTCDLLYIPYKENGYELWVRSDYLQNTPTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Fig
                                                                                                                                                                                                                                                                                                                     203
                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                   A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   98GB-0013917.
97GB-0025046.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein Ih/Bm-HBP1
                                                                                                                                                                                                                                              31.4%; Score 353; DI 36.3%; Pred. No. 5.10 Live 41; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      English.
 202
                                                                                                                                                                                                                                                              DB 20;
5.1e-27;
                                                                                                                                                                                                                                               81;
                                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                               Gaps
                                                                                                      116
```

176 CQFIFDL-VALGRTTYNISTPDCV 198

```
RESULT 5
AAW37447
                                                                       from a salivary gland cDNA library. FS-HSP1 (see AAW37446) and male-specific HSP1 (see AAW37446) and a related protein, D.RET6 (see CAW37449) from Dermacenter reticularis, were also identified. These convel vasoactive amine binding proteins (VABPs) can be expressed in host cells using e.g. a baculovirus expression system. They can be used: (i) to assay histamine (or other VA such as serotonin) in body fluids or cell culture supernatants, e.g. to monitor the effect of allergens; (ii) for binding VA, e.g. to remove histamine or anti-inflammatory agents, e.g. for treating insect, snake or scorpion bites or dermatitis, or as a carrier for slow release of histamine-related compounds; (iv) in vaccines to protect against metazoan parasites, especially in animals; (v) as reagents for the studying inflammation, involvement of VA in ulcer formation or the
                                                                                                                                                                                                                                                                This protein comprises tick Rhipicephalus appendiculatus (Ra) novel female-specific histamine binding protein 2 (FS-HBP2). Its amino acid sequence was deduced from a cDNA clone (see AAW00228) obtained from a salivary gland cDNA library. FS-HSP1 (see AAW37446) and male-specific HSP1 (see AAW37448) and a related protein, D.RET6 (see
                                                                                                                                                                                                                                                                                                                                                                                                              New vasoactive amine binding proteins and related nucleic vectors - transformed cells and transgenic animals, used f assaying or removing histamine and as antihistamine or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI;
Sequence
                                                                                                                                                                                                                                                                                                                                                                 Example
                                                                                                                                                                                                                                                                                                                                                                                             anti-inflammatory agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Nuttall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (OXFO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19-MAY-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    27-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO9744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           insect bite; snake bite; scorpion bite; dermatitis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Female-specific vasoactive amine binding protein 1; FS-HCP1; histamine; serotonin; assay; antihistamine; anti-inflammatory;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Tick vasoactive amine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          08-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAW37447;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAW37447 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1998-018506/02
                                            response etc. VABPs provide a more sensitive assay for ine than low-affinity antibodies currently used. They may
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PA,
                                                                                                                                                                                                                                                                                                                                                               2; Fig 2; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OXFORD
190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             animal; tick.
                               effective
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        97GB-0007844.
96GB-0010484.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      97WO-GB01372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /label= Sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         entry)
                               safer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        protein 2 FS-HBP2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        B
                            than
                             conventional antihistamines
                                                                                                                                                                                                                                                    These
```

S S

LLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYEN

Query Match Best Local Matches

| Similarity | 72; Conserv

Conservative

32;

Score 290.5; DB 19, Pred. No. 8.1e-21; 2; Mismatches 79;

Indels Length

17;

Gaps

66

Query Match

Sequence

190

A

Best Local Similarity

25.8%; 36.0%;

Score Pred.

290.5; DB 2 No. 8.1e-21;

20;

Length 190

25.8%;

```
RESULT 6
AAY18079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                        This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used as components of vaccines directed against blood-sucking
                                                                                                                                                                                                                                                                                      Histamine and serotonin binding of allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator; tissue repair; blood-sucking ectoparasite; therapy.
                            ectoparasites
                                                                                                                                                                                                                                                      Claim 1; Fig
                                                                                                                                                                                                                                                                                                                                                                                     Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Histamine binding protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAY18079;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAY18079 standard;
                                                                                                                                                                                                                                                                                                                                                     WPI; 1999-357841/30
                                                                                                                                                                                                                                                                                                                                                                                                                   (OXFO-) OXFORD VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                   26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  26-JUN-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Histamine binding protein FS-HBP2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FNEY-AVGRETRDVFTSACL 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNAD----QGCELWVKKSHYKHVPDYCTFV 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ENAFRYETEDGQVFTDVIAYSD-DNCDVIYVPGTDGNEEGYELWT--TDYDNIPANCLNK 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DP-VWGNDFTCVGVMANDVNEDEKSIQAEFLFMNNADTNMQF--ATEKVTAVKMYGY-NR 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FNVFCAKDRKTYDIFNEECV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DTGSWGSQFKCLQVQEIERKEEDYTVTSVFTF-RNASSPIKYYNVTETVKAVFQYGYKNI 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LLILSLALVLA-----LSQVKGNQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKN
                                                                                                                                                                                                                                                       2; 84pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                 98GB-0013917.
97GB-0025046.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Protein; 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           serotonin binding compound; inflammation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      202
                                                                                                                                                                                                                                                                                                     compounds useful
                                                                                                                                                                                                                                                                                                      for the treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     57
```

```
ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                       This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used as components of vaccines directed against blood-sucking also be used as components of vaccines directed against blood-sucking
                                                                                                                                                                                                                      Claim 12; Fig 6; 84pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gastric acid secretion; allergy; type I hypersensitivity reaction;
asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Histamine binding protein Av-HBP
                                                                                                                                                                                                                                                                                              WPI; 1999-357841/30.
N-PSDB; AAX76969.
                                                                                                                                                                                                                                                                                                                                                                                                   26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        W09927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Amblyomma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Histamine binding protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAY18084;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAY18084 standard;
                                                                                                                                                                                                                                                                 Histamine and serotonin binding
                                                                                                                                                                                                                                                                                                                                           Nuttall
                                                                                                                                                                                                                                                                                                                                                                                                                                              26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                       (OXFO-) OXFORD
                                                                                                                                                                                                                                                     allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   repair;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             72;
                                                                                                                                                                                                                                                                                                                                         PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ENAFRYETEDGQVFTDVIAYSD-DNCDVIYVPGTDGNEEGYELWT--TDYDNIPANCLNK 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DP-VWGNDFTCVGVMANDVNEDEKSIQAEFLFMNNADTNMQF--ATEKVTAVKMYGY-NR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DTGSWGSQFKCLQVQEIERKEEDYTVTSVFTF-RNASSPIKYYNVTETVKAVFQYGYKNI 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FNEY-AVGRETRDVFTSACL 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FNVFCAKDRKTYDIFNEECV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNAD---QGCELWVKKSHYKHVPDYCTFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LLILSLALVLA - - - - - LSQVKGNQPDWADEAANGAHQDAWKSLKADVENVYYMVKATYKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      variegatum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                         Paesen
                                                                                                                                                                                                                                                                                                                                                                       VACS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 blood-sucking ectoparasite; therapy.
                                                                                                                                                                                                                                                                                                                                                                                                   98GB-0013917
97GB-0025046
                                                                                                                                                                                                                                                                                                                                                                                                                                               98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Protein; 198
                                                                                                                                                                                                                                                                                                                                                                       LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        serotonin binding compound;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                202
                                                                                                                                                                                                                                                                   compounds useful for the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ₿
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          inflammation;
                                                                                                                                                                                                                                                                   treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 57
```

```
RESULT 8
AAB74289
ID AAB7
δÃ
                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                      밁
                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   So
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                 Matches
                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                         Use of histacalin proteins for treating or preventing conjunctivitis, or for manufacturing a medicament for preventing conjunctivitis, e.g. seasonal or perennial conjunctivitis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                            Sequence
                                                                                                                                                                                       Claim 4; Page 5-6;
                                                                                                                                                                                                                                                                 WPI; 2001-257675/26.
                                                                                                                                                                                                                                                                                      Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                       24-AUG-2000; 2000WO-GB03282
                                                                                                                                                                                                                                                                                                                                                                                                  WO200115719-A2
                                                                                                                                                                                                                                                                                                                                                                                                                        Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                             Histacalin; FS-HBP1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Histacalin protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAB74289 standard; protein; 171
                                                                                                                                is the histacalin p
                                                                                                                                                       for
                                                                                                                                                                 The present invention relates to the use of a histacalin protein
                                                                                                                                                                                                                                                                                                                                                                             08-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       20-JUN-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAB74289;
                                                                                                                                                                                                                                                                                                           (EVOL-) EVOLUTEC LTD
                                                                             Local
                                                                                                                               treating or preventing conjunctivitis. The present sequence the histacalin protein FS-HBP1. The invention is particularly the treatment of allergic or seasonal conjunctivitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       91
 91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      31 PLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQVQEIERKEEDY
                                   31 PLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQVQEIERKEEDY
                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
TVTSVFTF-RNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDGE 149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CNLLSFPYQRNKPQ-CELWVKDTRVDNIPPCCSFMFDYLCPQPR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CDVFYVP---NADQGCELWVKKSHYKHVPDYCTFVFNVFCAKDR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TVELEFSFRNRTGILCMRN--QTVRAGKDYFYHQ-PNAFEFMLRGNRSFSNAVMFTDGMT 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TVTSVFTFRNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDGEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PTWADEGREGKYQNAWKALNQRINTTHVLVRSTYIDNPYLWGKNFSCVRARTVEVEPSSK
                                                                                                            171 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   198
                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                       Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (first
                                                                                                                                                                                                                                                                                                                                 99GB-0020674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ž
                                                                                                                                                                                      19pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FS-HBP2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                25.3%;
35.4%;
                                                                           25.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                            conjunctivitis
                                                                  29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score
Pred.
                                                                            Score
Pred.
                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   284.5;
No. 3.4
                                                                           282; DB 2
No. 5e-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .4e-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB
                                                                                    22;
                                                                  69;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20;
                      VWGNDFTCVGVMANDVNEDEK
                                                                                     Length 171;
                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length
                                                                                                                                                                                                                      y non-infective
c treating or
L allergic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            191
                                                                 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7;
                                                                 Gaps
                                                                                                                                           useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             82
                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  90
```

SIQAEFLFMNNADTNMQF--ATEKVTAVKMYGY-NRENAFRYETEDGQVFTDVIAYSD-D

```
RESULT 9
AAB73261
ID AAB7
XX AAB7
XX AAB7
XX AAB7
XX AAB7
XX PS-H
XX PS-H
XX OPth
XX Unid
XX U
RESULT 10
AAW37448
ID AAW37
XX
AC AAW37
XX
AC AAW37
XX
                                                                                                                                                                                                                                        뭥
                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                                                       B
                                                                                                                                                                                                                                                                                                                                                                                        Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The present invention relates to a method for treating or preventing allergic rhinitis. The method involves employing a blood-feeding ectoparasite-derived (e.g. tick-derived) histacalin protein. The present sequence is one such histacalin protein. The histacalin protein, is useful for treating or preventing allergic rhinitis, both seasonal and
     08-JUN-1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Use of histacalin proteins for treating or preventing allergic rhinitis, or for manufacturing a medicament for treating or preventing allergic rhinitis, e.g. seasonal or perennial allergic rhinitis.
                                                      AAW37448;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       useful for treating or preventing allergic perennial allergic conjunctivitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nuttall
                                                                                                         AAW37448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disclosure; Pages 4-6; 19pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (EVOL-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-SEP-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            24-AUG-2000; 2000WO-GB03287.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  08-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO200116164-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       opthalmological;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FS-HBP2; histacalin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Histacalin protein FS-HBP2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         15-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAB73261;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAB73261 standard; protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2001-218521/22
                                                                                                                                                                                                                                        118
                                                                                                                                                                                                                                                              150 LCDVEYVPNAD---QGCELWVKKSHYKHVPDYCTFVFNVFCAKDRKTYDIFNEECV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          150
                                                                                                                                                                                                                                                                                                                                            62
                                                                                                                                                                                                                                                                                                                                                                                             91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 31
                                                                                                                                                                                                                                                                                                                                                                                                                                                   ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EVOLUTEC LTD
                                                                                                      standard; Protein;
                                                                                                                                                                                                                                                                                                                                       SIQAEFLFMNNADTNMQF--ATEKVTAVKMYGY-NRENAFRYETEDGQVFTDVIAYSD-D
                                                                                                                                                                                                                                                                                                                                                                       TVTSVFTF-RNASSPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNITDTLIFTDGE 149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQVQEIERKEEDY 90
                                                                                                                                                                                                                                                                                                                                                                                                                                              PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDP-VWGNDFTCVGVMANDVNEDEK 61
                                                                                                                                                                                                                                      NCDVIYVPGTDGNEEGYELWT - - TDYDNIPANCLNKFNEY - AVGRETRDVFTSACL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCDVIXVPGTDGNEEGYELWT -- TDYDNIPANCLNKFNEY-AVGRETRDVFTSACL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LCDVFYVPNAD----QGCELWVKKSHYKHVPDYCTFVFNVFCAKDRKTYDIFNEECV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  25.1%;
llarity 37.5%;
Conservative 2
     (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99GB-0020673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       lin protein; antiinflammatory; antiallergic;
allergic rhinitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ဂ္ဂ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; Score 282; DB
; Pred. No. 5e-2
29; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     29;
                                                                                                      200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          171 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5e-20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     69;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                      170
                                                                                                                                                                                                                                                                                      202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       202
                                                                                                                                                                                                                                                                                                                                          117
```

```
Ş
                                                                                                                                                                              Ъ
                                                                                                                                                                                                               This protein comprises tick Rhipicephalus appendiculatus (Ra) novel CC male-specific histamine binding protein (MS-HBP1). Its amino CC acid sequence was deduced from a cDNA clone (see AAV0277) obtained CC from a salivary gland cDNA library. Female-specific HSP1 and CC HSP2 (see AAW37446-47) and a related protein, D.RET6 (see AAW37449) CC from Dermacenter reticularis, were also identified. These novel CC host cells using e.g. a baculovirus expression system. They can be used: (i) to assay histamine (or other VA such as serotonin) in CC bedy fluids or cell culture supernatants, e.g. to monitor the ceffect of allergens; (ii) for binding VA, e.g. to remove histamine or CC effect of allergens; (ii) for binding VA, e.g. to remove histamine or CC anti-inflammatory agents, e.g. for treating insect, snake or scorpion bites or dermatitis, or as a carrier for slow release of histamine-related compounds; (iv) in vaccines to protect against complete componeds; (iv) in vaccines to protect against componed parasites, especially in animals; (v) as reagents for the componed of the compo
                                                                                       Matches
                                                                                                         Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                New vasoactive amine binding proteins and related nucleic acid, vectors - transformed cells and transgenic animals, used for assaying or removing histamine and as antihistamine or anti-inflammatory agents
                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Example 2; Fig 3; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      19-MAY-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            W09744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      insect bite;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                histamine; serotonin; assay; antihistamine;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Male-specific
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Tick vasoactive amine binding protein 1 MS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (OXFO-) OXFORD VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1998-018506/02.
                                           ω
                                                                                         69;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAV00229
                       MQVVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKT
  MKYLLLV--LGAALCQNADA-----NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQA
                                                                                                                                                                            200 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    animal;
                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  snake bite; scorpion bite; dermatitis; vaccine;
nimal; tick.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  vasoactive amine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    97GB-0007844
96GB-0010484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      97WO-GB01372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /label= Sig_peptide
79..81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note= "Asn is N-glycosylated"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                            23.6%;
                                                                                       34;
                                                                                     Score 265; DB 19;
Pred. No. 3.1e-18;
4; Mismatches 71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein 1; MS-HCP1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             anti-inflammatory;
                                                                                                                            Length
                                                                                       Indels
                                                                                                                                   200;
                                                                                       26;
                                                                                       Gaps
```

δÃ

TYENDTGSWGSQFKCLQV--QEIERKEEDYTVTSVFTFRNAS-SPIKYYNVTETVKAVFQ

TQTTD-GVWGEEFTCVSVTAEKIGKKKLNATI----LYKNKHLTDLKESHETITVWKAYD

106

62 51

밁

```
Š
    밁
                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                               Matches
                                                                           Query Match
Best Local
                                                                                                                                                             This sequence is an example of a histamine or serotonin binding compound (A), of the invention. The compounds are useful for regulating the action of histamine and serotonin (in e.g. inflammation and gastric acid secretion), the detection, quantification and removal of histamine or serotonin (in animals, plants, cell cultures, food materials, or humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and drug allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used as components of vaccines directed against blood-sucking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator; tissue repair; blood-sucking ectoparasite; therapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma; urticaria; allergic rhinitis; atopic dermatitis; food allergy;
                                                                                                                                                                                                                                                                                                                                                                                         Histamine and serotonin binding compounds useful of allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 1999-357841/30
N-PSDB; AAX76966.
                                                                                                                       Sequence
                                                                                                                                                                                                                                                                                                                                                             Claim 1; Fig 3; 84pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                W09927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Histamine binding protein MS-HBP1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AAY18080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAY18080 standard; Protein; 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (OXFO-) OXFORD VACS LTD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       107
                                                               69; Conser
MKVLLLV--LGAALCQNADA-----NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQA
                    MQVVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KIPDCCKFTMAYFAQQQEKT 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HVPDYCTFVFNVFCAKDRKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             YGYKNIRNAIEYQVGGGLNIT--DTLIFTDGELCDVFYVP---NADQG-CELWVKKSHYK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Y---TTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSDEGDYELWVSEDKID
                                                                                                                        200
                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             appendiculatus.
                                                                                                                        ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          98GB-0013917
97GB-0025046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       98WO-GB03530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ်
(၃
                                                                          23.6%;
                                                            Score 265; DB 20;
Pred. No. 3.1e-18;
4; Mismatches 71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          193
                                                                                                                                                                                                                                                                                                                                                                                                          for
                                                                                        Length 200;
                                                                                                                                                                                                                                                                                                                                                                                                          the treatment
                                                             26;
                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       163
    51
```

```
RESULT 12
AAW37446
ID AAW37
XX AW37
XX O8-JU
DT 08-JU
DT 10k
XX Femal
KW Femal
KW Femal
KW Linsec
XX Fem
CO Rhipi
XX W097
PN W097
PN W097
PN W097
PN W097
PN W097
PN U---
PN W097
PN U---
PN U---
PN W097
PN U---
PN W097
PN U---
PN U
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            당
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                              This protein comprises tick Rhipicephalus appendiculatus (Ra) novel female-specific histamine binding protein 1 (FS-HBP1). Its amino acid sequence was deduced from a cDNA clone (see AAV0227) obtained from a salivary gland cDNA library. FS-HSP2 and male-specific HSP1 (see AAW37447-48) and a related protein, D.RET6 (see AAW37449) cfrom Dermacenter reticularis, were also identified. These novel vasoactive amine binding proteins (VABPs) can be expressed in host cells using e.g. a baculovirus expression system. They can be used: (i) to assay histamine (or other VA such as serotonin) in body fluids or cell culture supernatants, e.g. to monitor the effect of allergens; (ii) for binding VA, e.g. to remove histamine or anti-inflammatory agents, e.g. for treating insect, snake or centre of the complete of the com
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     New vasoactive amine binding proteins and related nucleic ac vectors - transformed cells and transgenic animals, used for assaying or removing histamine and as antihistamine or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Female-specific vasoactive amine binding protein 1; FS-HCP1; histamine; serotonin; assay; antihistamine; anti-inflammatory; insect bite; snake bite; scorpion bite; dermatitis; vaccine;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      anti-inflammatory
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Nuttall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             18-APR-1997;
18-MAY-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                27 - NOV - 1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Rhipicephalus appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    transgenic animal; tick.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Tick vasoactive amine binding protein, 1 FS-HBP1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      08-JUN-1998 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAW37446 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Example 2; Fig 1; 44pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (OXFO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19-may-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO9744451-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1998-018506/02
DB; AAV00227.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            63 TYENDTGSWGSQFKCLQV--QEIERKEEDYTVTSVFTFRNAS-SPIKYYNVTETVKAVFQ 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OXFORD VACS LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HVPDYCTFVFNVFCAKDRKT 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KIPDCCKFTMAYFAQQQEKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Y---TTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSDEGDYELWVSEDKID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          YGYKNIRNAIEYQVGGGLNIT--DTLIFTDGELCDVFYVP---NADQG-CELWVKKSHYK 173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TQTTD-GVWGEEFTCVSVTAEKIGKKKLNATI----LYKNKHLTDLKESHETITVWKAYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             97GB-0007844
96GB-0010484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             97WO-GB01372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /label- Sig_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      agents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ⋛
```

```
RESULT 13
AAY18078
ID AAY18
XX AAY18
AC AAY18
AC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S
Matches 68
This sequence is an example of a histamine or serotonin becompound (A), of the invention. The compounds are useful the action of histamine and serotonin (in e.g. inflammati acid secretion), the detection, quantification and remova
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Histamine binding protein; serotonin binding compound; inflammation; gastric acid secretion; allergy; type I hypersensitivity reaction; asthma: urticaria; allergic rhinitis; atopic demantitis; food allergy; drug allergy; abnormal blood pressure; psychological disorder; vaccine; respiratory disease; coronary heart disease; cellular growth regulator;
                                                                                                                                 Claim 1; Fig 1;
                                                                                                                                                                                                                                                                                                                                      Nuttall
                                                                                                                                                                                                                                                                                                                                                                                    (OXFO-)
                                                                                                                                                                                                                                                                                                                                                                                                                                     26-JUN-1998;
26-NOV-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26-NOV-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               03-JUN-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WO9927104-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Rhipicephalus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Histamine binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      06-AUG-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAY18078 standard; Protein; 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          immune response etc. VABPs provide a more sensitive assay for histamine than low-affinity antibodies currently used. They may also be more effective and safer than conventional antihistamines
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     studying
                                                                                                                                                                                  allergies
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             allergy; abnormany
biratory disease; coronary
                                                                                                                                                                                                                                                                                    1999-357841/30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               --
                                                                                                                                                                                                                                                                                                                                PA,
                                                                                                                                                                                                                                                                                                                                                                                    OXFORD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                parasites, especially in animals; (v) as inflammation, involvement of VA in ulcer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LEKFNEYAA-GLPVRDVYTSDCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         KNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNAD---QGCELWVKKSHYKHVPDYC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYKNDP-VWGNDFTCVGTAAQNLNEDEKNVEAWFMFMNNADTV-YQHTFEKATPDKMYGY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TEVENVECAKORKTYDIENEECV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MKLLLSLAFVLALSQVKA-----DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MQVVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -NKENAITYQTEDGQVLTDVLAFSD-DNCYVIYALGPDGSGAGYELWA--TDYTDVPASC
                                                                                                                                                                                                       and serotonin binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                   Paesen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            appendiculatus
                                                                                                                                                                                                                                                                                                                                                                                    VACS
                                                                                                                                                                                                                                                                                                                                                                                                                                     98GB-0013917
97GB-0025046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           blood-sucking ectoparasite;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              98WO-GB03530
                                                                                                                            84pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein FS-HBP1.
                                                                                                                                                                                                                                                                                                                                                                                    LTD.
                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      22.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 252; DB
Pred. No. 5.7e
28; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A
                                                                                                                                                                                                       compounds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 252; DB 19;
No. 5.7e-17;
                                                                                                                                                                                                         useful
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               , 68
                                                 serotonin binding are useful for regulating
                            inflammation and
                                                                                                                                                                                                       for the treatment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 190;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   formation
     o
E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
```

```
RESULT 14
AAB74290
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  388888888888888
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                      Use of histacalin proteins for treating or preventing conjunctivitis, or for manufacturing a medicament for preventing conjunctivitis, e.g. seasonal or perennial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 humans) and in the treatment of various diseases and allergies (e.g. type I hypersensitivity reactions, urticaria, asthma, allergic rhinitis (hay fever), atopic dermatitis, insect bites and food and dru allergies, abnormal blood pressure, migraine, psychological disorders, respiratory disease, and coronary heart disease). Histamine may also be used to regulate cellular growth and tissue repair. The molecules may also be used as components of vaccines directed against blood-sucking
                                                                     Claim 4;
                                                                                                                                                                                                                                                      24-AUG-2000;
                                                                                                                                                                                                                                                                                                                          Unidentified
                                                                                                                                                                                                                                                                                                                                                  Histacalin;
                                                                                                                                                                                                                                                                                                                                                                       Histacalin protein MS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                               AAB74290
                                                                                             conjunctivitis
                                                                                                                                                                              Nuttall PA,
                                                                                                                                                                                                      (EVOL-) EVOLUTEC LTD
                                                                                                                                                                                                                              01-SEP-1999;
                                                                                                                                                                                                                                                                             08-MAR-2001
                                                                                                                                                                                                                                                                                                    WO200115719-A2
                                                                                                                                                                                                                                                                                                                                                                                                20-JUN-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ectoparasites.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     or serotonin (in animals, plants,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                        2001-257675/26.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 68; Conser
                                                                     Page
                                                                                                                                                                                                                                                                                                                                                                                                                                               standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYKNDP-VWGNDETCVGTAAQNLNEDEKNVEAWEMEMNNADTV-YQHTFEKATPDKMYGY 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TFVFNVFCAKDRKTYDIFNEECV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -NKENAITYQTEDGQVLTDVLAFSD-DNCYVIYALGPDGSGAGYELWA--TDYTDVPASC 166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KNIRNAIEYQVGGGLNITDTLIFTDGELCDVFYVPNAD----QGCELWVKKSHYKHVPDYC 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYENDTGSWGSQFKCLQVQEIERKEEDYTVTSVFTFRNASSPIKYYNVTETVKAVFQYGY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MKLLLSLAFVLALSQVKA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MQVVLLLTFVSAALATQAETTSAKAGENPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LEKFNEYAA-GLPVRDVYTSDCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  190
                                                                                                                                                                                                                                                                                                                                                  MS-HBP1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                              Paesen
                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                      2000WO-GB03282
                                                                     5-6;
                                                                                                                                                                                                                              99GB-0020674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ä,
                                                                    19pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                             protein; 182
                                                                                                                                                                              GC;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              22.4%;
                                                                                                                                                                                                                                                                                                                                                  conjunctivitis
                                                                    English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 252; DB
Pred. No. 5.7e
Pred. Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                               A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cell cultures,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -DKPVWADEAANGEHQDAWKHLQKLVEENYDLIKA 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 20;
.7e-17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      food
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 190;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                       non-infective
c treating or
l allergic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     materials,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ٥ŗ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 drug
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           be
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            122
```

The present invention relates to the use of a histacalin protein for treating or preventing conjunctivitis. The present sequence is the histacalin protein FS-HBP1. The invention is particularly in the treatment of allergic or seasonal conjunctivitis.

protein

useful

S

Sequence

182

22.4%; Score 251.5; 35.3%; Pred. No. 6e-

.5; DB 22; 6e-17;

Length 182;

밁

113

```
AAB73262
ID 7AB73
XX AAB73
XX AAB73
XX AAB73
XX AAB73
XX H1sta
XX WS-HB
KW WS-HB
KW OPTha
XX 
                            Ş
                                                                               밁
                                                                                                                               õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ś
                                                                                                                                                                                           Query Match
Best Local S
Matches 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity
Matches 61; Conserv
                                                                                                                                                                                                                                                                                                                                                    The present invention relates to a method for treating or preventing allergic rhinitis. The method involves employing a blood-feeding ectoparasite-derived (e.g. tick-derived) instructain protein. The present sequence is one such histacalin protein. The histacalin protein, is useful for treating or preventing allergic rhinitis, both seasonal and perennial allergic conjunctivitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Use of histacalin proteins for treating or preventing allergic rhinitis, or for manufacturing a medicament for treating or preventing allergic rhinitis, e.g. seasonal or perennial allergic rhinitis
                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Disclosure; Pages 4-6; 19pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Nuttall PA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-SEP-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               08-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO200116164-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MS-HBP1; histacalin protein; antiinflammatory; antiallergic; opthalmological; allergic rhinitis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Histacalin protein MS-HBP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAB73262;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAB73262 standard; protein; 182 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         24-AUG-2000; 2000WO-GB03287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (EVOL-) EVOLUTEC LTD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2001-218521/22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      145
                               88
                                                                                                                                     30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        30
                                                                                                                                                                                              61;
                                                                                  щ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     _
                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTD-GVWGEEFTCVSVTAEKIGKKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FTDGELCDVFYVP---NADQG-CELWVKKSHYKHVPDYCTFVFNVFCAKDRKT 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LNATI ---- LYKNKHLTDLKESHETITVWKAYDY --- TTENGIKYETQGTRTQTFEDVFV 112
                                                                                                              NPLWAHEELLGKYQDAWKSIDQGVSVTYVLAKTTYENDTGSWGSQFKCLQV--QEIERKE 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EDYTYTSVETERNAS-SPIKYYNVTETVKAVFQYGYKNIRNAIEYQVGGGLNIT--DTLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FSDYKNCDVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKT 165
                                                                                                                                                                                                                                                                                                       182 AA;
                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Paesen GC;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   99GB-0020673
                                                                                                                                                                                        22.4%; Score 251.5; DB 22; 35.3%; Pred. No. 6e-17; tive 29; Mismatches 66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 66;
                                                                                                                                                                                           Indels 17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                              Length 182;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                           8
```

```
δõ
                                                 밁
              145
                                                   60
FTDGELCDVFYVP---NADQG-CELWVKKSHYKHVPDYCTFVFNVFCAKDRKT 193
                                                LNATI ----LYKNKHLTDLKESHETITVWKAYDY ---TTENGIKYETQGTRTQTFEDVFV 112
```

Search completed: August 4, 2003, 17:14:39 Job time : 84 secs

THIS PACE BLANK (USPTO)

```
Minimum DB
Maximum DB
                                                                                                                                                                                           Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Post-processing: Minimum Match 0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9:
                                                                                                                                                                                                                                               Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
    251.5
113.5
195.5
95.5
92
92
92
92
92
92
92
92
92
93
87
87
86.5
86.5
85.5
                                                                                                                                                                                           Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   seq
seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                      SPTREMBL_23:*
1: sp_archea:*
2: sp_bacteria:
3: sp_fungi:*
4: sp_human:*
5: sp_inverteb:
6: sp_mammal:*
7: sp_mac:*
9: sp_phage:*
10: sp_plant:*
11: sp_vius:*
12: sp_vius:*
13: sp_vertebra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-087-195-8
989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        August 1, 2003, 12:15:04; Search time 52.3467 Seconds (without alignments) 897.203 Million cell updates/sec
                                                                                                                                                                                                     Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         830525 seqs, 258052604 residues
   25.4
111.5
9.7
9.3
9.3
9.3
9.3
9.3
8.8
8.8
8.7
8.7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NPTWANEAKLGSYQDAWKSL.....EKTVRNVYTDSSCKPAPAQN 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GenCore version 5.1.6 Copyright (c) 1993 - 2003 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                            sp_archea:*
sp_bacteria:*
                                                                                                                                                                                                                                                                                           sp_rvirus:*
sp_bacteriap:*
sp_archeap:*
                                                                                                                                                                                                                                                                                                                                                                                          sp_organelle:*
                                                                                                                                                                                                                                                                                                                                                                                                                 sp_mammal:*
                                                                                                                                                                                                                                                                                                                                                                                                                            sp_invertebrate:*
                                                                                                                                                                                                                                                                                                                          sp_virus:*
sp_vertebrate:*
sp_unclassified:*
                                                                                                                                                                                                                                                                                                                                                           sp_plant:*
sp_rodent:*
                                                                                                                                                                                          Length
    209
310
311
210
220
220
306
581
169
483
483
467
3467
3467
                                                                                                                                                                                           DB
     Q8MVC2
Q8MV98
Q8MV98
Q8MVC3
Q8MA03
Q8NB10
Q9S273
Q9RPY9
Q9RPY9
Q8K3S11
Q8I218
Q8I218
Q8I218
Q8I218
Q8I218
Q8I218
Q8I218
Q8I218
                                                                                                                                                           Q8WSK7
Q05583
                                                                                                                                                                                                                            SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     830525
Q8wsk7 dermacentor Q05583 saccharomyc Q8mvc2 ixodes scap Q8mvb8 ixodes scap Q8mvb8 ixodes scap Q8mvb3 ixodes scap Q8ma03 homo sapien Q81b10 plasmodium Q05273 bacillus su Q92bx7 listeria in Q9rpy9 listeria moscap Q8k3s1 mus musculu Q81218 plasmodium Q8fq68 corynebacte Q8f3f8 leptospira Q8mqy7 drosophila
                                                                                                                                                                                        Description
```

Q8y763 listeria mo	Q8Y763	16	721		80.5
-	Q05508	ഗ	641		80.5
Q97ay2 thermoplasm	Q97AY2	17	433		•
æ	Q8EVF8	16	953		18
915	006915	N	912		81
Q951y3 macaca fasc	Q95LY3	6	581		18
w	Q9GP33	u	223		18
Q93214 staphylococ	Q932I4	16	817		٠
Q8pqg5 xanthomonas	Q8PQG5	16	501		•
Q0rin4 fusobacteri	QBRIN4	16	388		•
	Q8R7C5	16	196		81.5
o	08XII6	16	617		ဆ
	Q8EI47	16	577		82
	Q8DYV2	16	392		. 82
Q8e4g0 streptococc	Q8E4G0	16	392		82
·	096170	ഗ	1802		•
	Q8F3F9	16	498		82.5
O31951 bacillus su	031951	16	306		•
064070 bacteriopha	064070	9	306	8.3	82.5
P87514 border dise	P87514	12	3896		
	QBILS3	G	1124		
Q90193 agaricus bi	090193	12	1078		
exnl	Q9EXN1	N	778		ω
ס	Q8IJW5	ۍ	1073		84
Q43079 pisum sativ	Q43079	10	582		
\mathbf{r}	Q8YAN1	16	1959		
O61096 trypanosoma	061096	G	662		
816a8	\sim	10	514		œ
Q9vch4 drosophila	Q9VCH4	ഗ	1970		85.5

ALIGNMENTS

					•								
							٠.						
Qу	Фу	ФФ	Ma Be	SQ.	RR	RRA	R R	28	888	֓֞֓֓֓֓֓֓֓֓֟֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	3 5	8 H	RESULT Q8WSK7
113 FSDYKNCDVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKT 165 	60 LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFV 112 : : : :	1 NPTWANEAKLGSYODAWKSLQQDQNKRYYLAQATQTTD-GVWGEEFTCVSVTAEKIGKKK 59 :	Query Match 25.4%; Score 251.5; DB 5; Length 209; Best Local Similarity 35.3%; Pred. No. 2.1e-14; Matches 61; Conservative 29; Mismatches 66; Indels 17; Gaps 8;	InterPro; IPR002970; His_binding. Pf6am; PF02098; His_binding; 1. SEQUENCE 209 AA; 23889 MW; E5EB8BE710859591 CRC64;	Submitted (DEC-1999) to the EMBL/GenBank/DDBJ databases. EMBL; AF217101; AAL56644.1; -	Sangamaadech S., Paesen G.C., Nuttall P.A.; "A high affinity serotonin- and histamine-binding lipocalin secreted by blood-feeding ticks.";	[1] SEQUENCE FROM N.A.	Parasitiformes; Ixodida; Ixodidae; Dermacentor. NCBI_TaxID=57047;	Dermacentor reticulatus, Bukarvota: Metazoa: Arthropoda: Chelicerata: Arachnida: Acari:	01-JUN-2002 (TrEMBLrel. 2), Last annotation update) Serotopin and histamine hinding protein	01-MAR-2002 (Trembirel 20, Created)	Q8WSK7 PRELIMINARY; PRT; 209 AA. Q8WSK7;	LT 1

```
RESULT 3
Q8MVC2
ID Q8MV
                                                                                                     밁
                                                         밁
                                                                           Q
                                                                                                                         δõ
                                                                                                                                                  밁
                                                                                                                                                                     Ş
                                                                                                                                                                                                                                          RESULT
Q05583
                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                Jia Y., Cherry J.M.;
Submitted (JUN-1997) to the E
EMBL; U51030; AAB64456.1; -.
SGD; S0002675; YDR267C.
InterPro; IPR001680; WD40.
Pfam; PF00400; WD40; 7.
Q8MVC2
                                                                                                                                                                                                                                          Repeat; W
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRAIN-S288C;
STRAIN-S288C;
Johnston M., Andrews S., Brinkman R., Cooper J., Lindy
Favello A., Fulton L., Gattung S., Greco T., Kirsten J
Hallsworth K., Hawkins J., Hiller L., Jier M., Johnso
Johnston L., Langston Y., Latrelle P., Le T., Mardis
Johnston L., Langston Y., Peluso D., Rifken L., I

Banilev A., Peluso D., Rifken L., I
Wohldm,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q05583;
Q05583;
                                                                                                                                                                                                                                                            PRINTS; PR00320; GPROTEINERPT.
PRODOM; PD000018; WD40; 1.
SMART; SM00320; WD40; 7.
PROSITE; PS00678; WD_REPEATS_1; 1.
PROSITE; PS50082; WD_REPEATS_2; 5.
PROSITE; PS50294; WD_REPEATS_REGION;
                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN-S288C;
                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                     Submitted (MAY-1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRAIN-S288C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Miller N., Nhan M., Pauley A., Peluso D., Rifk
Taich A., Trevaskis E., Vignati D., Wilcox L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Submitted (MAR-1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN-S288C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NCBI_TaxID=4932;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Saccharomycetales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Eukaryota; Fungi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Saccharomyces cerevisiae (Baker's yeast).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similar to S. CEREV
YDR267C OR D9954.11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-NOV-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Waterston
                                                                              124
                                                                                                      165
                                                                                                                                                  114
                                                         225
                                                                                                                             69
                                                                                                                                                                       16
                                                                                                                                                                                               38;
                                                                                                                                                                                                                                                     ₩
                                                                                                                                                                                                        Similarity
                                                                             VPKERGSDEGDYELWVSE
                                                                                                                                                                     AWKSLQQDQNKRYYLAQATQTTDGVW------GEEFTCVSVTAEKIGKKKLNATILYKN
                                                      VWKYMGDDEDDQQEWVCE
                                                                                                                                                 AW-----SNDGYYLATCSR-DKSVWIWETDESGEEYECISVLQEH--SQDVKHVIWHPS
                                                                                                  EALLASSSYDDTVRIWKDYDDDWECVAVLNGHEGTVWSSDFDKTEGVFRLCSGSDDSTVR
                                                                                                                         KHLTDLKESHETITVWKAYDYTTE----NGIKYETQGTRTQTFEDVFVFSDYKNCDVIF
                                                                                                                                                                                                                                                                                                                                                                                                                                                   ₽.
                                                                                                                                                                                                                                          repeat.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (MAR-1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Waterston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (TrEMBLrel. (TrEMBLrel. (TrEMBLrel.
                                                                                                                                                                                              Conservative
PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TIEMBLIEL. 01, Created)
TIEMBLIEL. 01, Last sequence up
TIEMBLIEL. 23, Last annotation
CEREVISIAE SEC13P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ascomycota;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Saccharomycetaceae;
                                                                                                                                                                                                                                          37274 MW;
                                                                                                                                                                                                        11.5%;
27.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                      ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6
                                                                                                                                                                                                                                                                                                                                                                                                                                      the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             the EMBL/GenBank/DDBJ
                                                                                                                                                                                             17;
                                                                             141
                                                                                                                                                                                                                                                                                                                                                                              EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                      Score 113.5; DB Pred. No. 0.051;
PRT.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Saccharomycotina;
                                                                                                                                                                                                                                        B44CCAA3125FD666 CRC64;
                                                                                                                                                                                             Mismatches
311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Cooper J., Ding H., eco T., Kirsten J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Saccharomyces
A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           À
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                 DB 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               update)
                                                                                                                                                                                             62;
                                                                                                                                                                                                                                                                                                                                                                                                                                      databases
                                                                                                                                                                                                                                                                                                                                                                              databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Wohldman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Johnson D.,
Mardis E., M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Saccharomycetes
                                                                                                                                                                                             Indels
                                                                                                                                                                                                                 Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Riles
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kucaba
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Menezes S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Du
                                                                                                                                                                                            21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Vaudin M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            т.,
                                                                                                                                                                                          Gaps
                                                                                                                          123
                                                                                                                                                164
```

```
Q
                                           밁
                                                                                                                                                                                                                   AC OCC DIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT
Q8MV98
                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                            STRAIN-Rhode Island; TISSUE-Salivary Valenzuela J.G., Francischetti I.M., Mather T.N., Ribeiro J.M.C.; "Exploring the Sialome of the Tick Ve scapularis.";
                                                                                                                                                                                                                                                                                                                                                                                                                                              01-OCT-2002 (TrEMBLrel. 22, Created)
01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Putative 22.5 kDa secreted protein.
Ixodes scapularis (Black-legged tick) (Deer tick).
Eukaryota, Metazoa; Arthropoda; Chellcerata; Arachnida;
Parasitiformes; Ixodida; Ixodidae; Ixodes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted EMBL; AF48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-OCT-2002 (TrEMBLrel. 22, Created)
01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
01-OCT-2002 (TrEMBLrel. 22, Last annotation update)
11-OCT-2002 (TrEMBLrel. 22, Created)
11-OCT-2002 (TrEMBLrel. 22, Created)
12-OCT-2002 (TrEMBLrel. 22, Created)
13-OCT-2002 (TrEMBLrel. 22, Last sequence update)
13-OCT-2002 (TREMBLRel. 22, L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN=Rhode Island; TISSUE=Salivary Valenzuela J.G., Francischetti I.M., Mather T.N., Ribeiro J.M.C.; "Exploring the Sialome of the Tick Ve scapularis.";
                                                                                                                                                                                                                                      Submitted (FEB-2002) to the EMBL/GenBank/DDBJ databases EMBL; AF483742; AAM93664.1; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      86AW8Ö
                                                                                                                                                                                                                   SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=6945;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  28MV98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q8MVC2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               tted (FEB-2002) to the EMBL/GenBank/DDBJ
AF483718; AAM93640.1; -.
NCE 311 AA; 36581 MW; D7E529FEFE4CFAS
                                           29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   32
                                                                                       7
                                                                                                                             Similarity 38; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ш
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  46;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                           DEKYWQYQDIQRALNNPDRESWLYYRTYRRETD-
                                                                               EAKLGSYQDAWKSLQQ-DQNKRYYLAQATQTTDGVWGEEFTCVS-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WLSEDWLKK 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WVSEDKIDK 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LNFNFLCESGGCRIHHQECWQKRWTKYSEKYVLFS----TPLCYVVRSLQDDEGYESCEF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NYTLKSANYTSKWYNRTSKRMNSSTQYVQAAKQKYYS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       G--KKKLNATILYKNKHLTDLKESHETITVWKAYDY----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWG-----EEFTCVSVTAEKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -----ETQGTR---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NPD-LNRKDLGAMQDAWRTIKFTANHSYYLIYSSG-----WGTREHYEDVRCLQVHSSDL
                                                                                                                                                                                                              210 AA;
                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                24689 MW;
                                                                                                                                            9.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11.0%;
    ATILYKNKHLTDL--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   the Tick Vector of
                                                                                                                               30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  25;
                                                                                                                           Score 95.5; D
Pred. No. 1.1;
30; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pred. No. 0.1.
5; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 108.5;
Pred. No. 0.
                                                                                                                                                                                                                                                                                                  Tick Vector
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRT;
                                                                                                                                                                                                                C5B75614649A9BED CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  D7E529FEFE4CFA9A CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TOTFEDVEVFSDYKNCDVIFVPKERGSDEG--DYEL 137
                                                                                                                                                                                                                                                                                                                                         gland;
Pham V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gland;
Pham V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (Deer tick).
    KESHETITVWKAYDYTTENGIKYETQGTR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        . 13;
                                                                                                                                                                                                                                                                                                  of
                                                                                                                                                                         DB
                                                                                                                                                                                                                                                                                                                                         V.M., Garfield
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             V.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DВ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   update)
                                                                                                                               59;
                                                                                                                                                                                                                                                                                                  Lyme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  65;
                                           GSEHICVSAKVSENQPNGSDYEFV
                                                                                                                                                                    ٥
۲:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Lyme Disease,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Arachnida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IENIMHLGQPQREVTSPNGTCYN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Garfield
                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                  Disease,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                         210;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Acari;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Acari;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3
                                                                                                                                                                                                                                                                                                                                            .
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            311;
                                                                                                                             43;
                                                                                                                                                                                                                                                                                                    Ixodes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -TTENGIKY- 97
                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                           85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           55
                                                                                                                             9;
```

á

망

밁

Gaps

10;

58 84

142 112

```
RESULT OR RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S
Matches 47
                                                                                                                                                                                                                                                       01-CCT-2002 (TrEMBLrel. 22, Created)
01-CCT-2002 (TrEMBLrel. 22, Last sequence update)
01-CCT-2002 (TrEMBLrel. 22, Last sequence update)
Putative secreted histante binding protein.
Ixodes scapularis (Black-legged tick) (Deer tick).
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachni Parasitiformes; Ixodida; Ixodidae: Trofon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           O8MYB8;
O1-OCT-2002 (TrEMBLrel. 22, Created)
O1-OCT-2002 (TrEMBLrel. 22, Last sequence update)
O1-OCT-2002 (TrEMBLrel. 22, Last annotation update)
Putative secreted protein
Ixodes scapularis (Black-legged tick) (Deer tick).
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari;
Parasitiformes; Ixodida; Ixodidae; Ixodes.
                                                                                                           STRAIN-Rhode Island; TISSUE-Salivary Valenzuela J.G., Francischetti I.M., Valenzuela J.G., Ribeiro J.M.C.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN-Rhode Island; TISSUE-Salivary Valenzuela J.G., Francischetti I.M., Mather T.N., Ribeiro J.M.C.;
                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Submitted (FEB-2002) to the EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     88AM86
                                      Submitted
                                                            scapularis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q8MVC3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            scapularis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A.
                                                                                  "Exploring the Sialome of the Tick Vector of Lyme
                                                                                                                                                                                                                                               NCBI_TaxID=6945;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Exploring the Sialome of the Tick Vector of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID=6945;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     104
           tted (FEB-2002) to the AF483717; AAM93639.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AF483722; AAM93644.1;
NCE 220 AA; 25375 M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  47; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        YGCTVVKPKYYVYDEMIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEDV-FVFSDYKNCDVIFVPKERGSDEGDYELWVSEDK--IDKIPDCCKFTMAYFAQQQE 163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TPVTKLKVFSSVGYRNNQTGHMDGFTALIITKKSYE-----GLVYDDMFSIGELTYTHYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EKIGKKKLNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQ---GTRTQT---
: | |: |: |: | | | |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NSAKL----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTA--------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QEYRLGTKEQNTRKTVTLYATPYKTEMHATQRQNNNAMRVSQKKD--AQDGKGYQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -----KTVRNVYTDSSC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              YKDYELLETDYETCFTIWRP----SDD-VYMVWMIDRRNITDINPQC---ETAYHGPVNE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ------LIYSDYNKCDILRVLRENSGH--DCELYLHSKALDDGVPRECE 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TQTFEDVFVFSDYKNCDVIFVPKERGSDEGDYELWVSEDKIDK-IPDCCK 152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -WL-----KRKKFYLVYRSAKNDTEFGGEAQCVQMKAFDIELPKKRFSWN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        25375 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            175
                                   EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 92;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No. 2.5;
9; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        614DD7258AA28DDE CRC64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRT;
                                                                                                                                      / gland;
Pham V.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gland;
Pham V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             V.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Lyme Disease,
                                                                                                                                                                                                                                                                                                 Arachnida; Acari;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 220
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Garfield
                                                                                                                                         Garfield
                                                                                     Disease,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .
                                                                                                                                         Σ.
.
                                                                                     Ixodes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         138
     RESULT
Q8IBIO
ID Q8
AC Q8
DT 01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT

QRANA
QRA

ID A08

ID A08

AC OR

AC
                                                                                                                                                                                                                                                                                                                                               οy
                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                           밁
                                                                                                                                                                                                                                 Qy
                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Q81BIO PRELIMINARY, Q81BIO; 01-mar-2003 (TrembLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matsumoto K., Hirano M., Sano S., Nomura R., Yoshikawa Y.,
Matsumura Y., Moriya S., Chiba E., Momiyana H., Onogawa S.,
Kaeriyama S., Satoh N., Matsunawa H., Takahashi E., Kataoka R.,
Kuga N., Kuroda A., Satoh I., Kamata K., Takami S., Terashima Y.,
Watanabe M., Sugiyama T., Irie R., Otsuki T., Sato H., Wakamatsu A.
Ishii S., Yamashita H., Matsuo K., Nakamura Y., Sekine M.,
Kimura K., Yamashita H., Matsuo K., Nakamura Y., Sekine M.,
Kikuchi H., Kanda K., Wagatsuma M., Murakawa K., Kanehori K.,
Kikuchi H., Kanda K., Wagatsuma M., Murakawa K., Kanehori K.,
Sugano S., Nagahari K., Masuho Y., Nagan A., Kawakami B., Suzuki Y.,
Sugano S., Nagahari K., Masuho Y., Nagan A., Isogai T.;
"NEDO human cDNA sequencing project.";
Submitted (JUL-2002) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted (JUL-2002) to the EMBL; AK093308; BAC04128.1; Hypothetical protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Hypothetical protein FLJ35989.
Homo sapiens (Human).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q8NA03;
01-OCT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Suzuki O., Sasaki N., Aotsuka S., Shoji T., Ichihara T.,
Matsumoto K., Hirano M., Sano S., Nomura R., Yoshikawa Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota; Metazoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-OCT-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q8NA03
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TISSUE-Testis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-OCT-2002
                                                                                                           œ
                                                                                                                                                                                                                                                                                              210
                                                                                                                                                                                                                                            118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       113
                                                                                                                                                                                           267
                                                                                                                                                                                                                                                                                                                                                                                                         151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 30
                                                                                                                                                                                                                                                                                                                                                                                                                                  4 WANEAKLGSYQDAWKSLQQDQNKRYYL---AQATQTTDGVWGEEFTCVSVTAEKIGKKKL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               40;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  سا
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                        N-PVVMVDREKKRLVELLKDLDEKDSGLSSSEGDQSGWV
                                                                                                                                                                                                                                            NCDVIFVPKER--
                                                                                                                                                                                                                                                                                                 EMQMQKLNKDFTCDVERNESLIKSGKKPFSNTE---KIELRGKHNQDFIKRNIELAKESR
                                                                                                                                                                                                                                                                                                                                               NATILYKNKHLT-DLKESHETITVWKAYDYTTENGIKYETQGTRTQTF--EDVFVFSDYK
                                                                                                                                                                                                                                                                                                                                                                                                    W-EEIKSAKYSEAWQSKEEMENTKKFLSLTAVSEETVGPSHEEEDTFSSVFHTQIPPEEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EYGDY-SCNTSSKPLTDMLKAAKDAVGSEAGSAE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -FSDYKNC------DVIFVPKER-GSDEGDYE 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IVNFTRTYYNE--TDGKNDTLEYQVRALNQTDYKLENVIRAGLKGTPSDKPTPLGSNMYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KLNATILYKNKHLTDLKES--HETITVWKAYDYTTENGIKYETQGT----RTQTFEDVFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NPL-LNEPSLGPLQSAWKAINKSKDDPFVLMFRSRNHE----PNITCVVVTASLHNETLK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGK--K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  al protein.
581 AA; (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (TremBLrel. 22, Created)
(TremBLrel. 22, Last sequence update)
(TremBLrel. 22, Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                         PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               <u>Α</u>,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Chordata;
Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               34232 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     66121 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9.3%;
        23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25;
        Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 92; DB 5; Pred. No. 3.7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 92;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
                                                         PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            B2DB09181CC4395D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  979A8B4DE2177C74 CRC64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        No.
                                                         956
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    581
                                                                                                                                                                                                                                            GSDEGDYELWV 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 4;
                                                         ₿
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 306
                                                                                                                                                                                           304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Shiohata
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       26;
```

Z

7

5

δ В S 망 Š 밁

밁

Gaps

60

209

```
RESULT OCOS 273

ID COT OCOS 273

OCOS 273

OCOS 274

OCOS 275

OC
   RESULT 10
Q92BX7
ID Q92BX
AC Q92BX
DT 01-DE
                                                                                                                                      QΥ
                                                                                                                                                                        В
                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                δÃ
                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local S
Matches 33
                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           005273
005273;
01-JUL-1997
01-JUL-1997
01-DEC-2001
   01-DEC-2001
                                Q92BX7
                                                                                                                                                                                                                                                                                                                                                                                      Oudega B., Koningstein G., Duesterhoeft A.;
"Bacillus subtilis genome project, DNA sequence from yucA to yucH.";
Submitted (APR-1997) to the EMBL/GenBank/DDBJ databases.
EMBL; Z93940; CAB07966.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Seeger K., Murphy L., Harris
Quail M., Barrell B.;
Submitted (SEP-2002) to the
EMBL; AL844506; CAD51020.1;
                                                                                                                                                                                                                                                                                                                                                             Hypothetical SEQUENCE 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hypothetical protein.
SPOUENCE 956 AA; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Plasmodium falciparum Eukaryota; Alveolata; NCBI_TaxID=36329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-MAR-2003
01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bacteria; Firmicutes; NCBI_TaxID=1423;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bacillus subtilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Hypothetical
                                                                                                              145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  116
                                                                                                                                                                         85
                                                                                                                                                                                                        95
                                                                                                                                                                                                                                     26
                                                                                                                                                                                                                                                                   45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               24
                                                                                                                                                                                                                                                                                                 35,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
33; Conser
                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                            WARELKLSPV
                                                                                                                                         WVSEDKIDKI 147
                                                                                                                                                                                           IKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERG----SDE-----
                                                                                                                                                                                                                                 FTWCHQLTTEELLKNRLGGVENILYTLFHIIDVEYSWIRAIQGKEDIAVQFA-DYQTLNK
                                                                                                                                                                                                                                                 FT-CVSVTAEKIGKKKLNA--TILYKNKHLTDLK-----ESHETITVWKAYDYTTENG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Y--CNLLV-----DEIDNSFKIIEDN-KSIHNICK----YFLQNFDENVTNNYYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                YKNCDVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTD
                                                                                                                                                                      VKSLSNTFRTEIIDVLQTHSDQIKDELVSVPWETGVLYTRDEILHHIIAHEIHHIGQLSV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KKYNEDFFYKNKKLKDLSKRENHHFDDIYKLY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KKLNATILYKNKHLTDL--KESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSD 115
                                                                                                                                                                                                                                                                                                                                                           169 AA; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           7 (TrEMBLrel. 04, 1
1 (TrEMBLrel. 19, 1
11 19.8 kDa proteir
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (TrEMBLrel.
   (TrEMBLrel.
                                                                                                                                                                                                                                                                                                Conservative.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (TrEMBLrel. 04,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein.
                                                                                                      154
                                                                                                                                                                                                                                                                                                                                                             19833 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    114829 MW;
                                                                                                                                                                                                                                                                                                              8.8%;
26.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Harris D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (isolate 3D7)
Apicomplexa;
   19,
                                                                                                                                                                                                                                                                                                19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 92;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Last
Last
 Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                Score 87;
Pred. No.
                                PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3D7).
exa; Haemosporida;
                                                                                                                                                                                                                                                                                                                                                         211319D174AF435F CRC64;
                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BF81CA9838F55B0A CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sequence update)
annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Berriman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bacillaceae;
                                483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB
15;
                                                                                                                                                                                                                                                                                                        DB
4.9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ;
|X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        update)
                                                                                                                                                                                                                                                                                                                           2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                                                                                                48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          35;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                databases
                                                                                                                                                                                                                                                                                                                         Length 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pain A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 956
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bacillus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Plasmodium.
                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                              28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EEKNYITD
                                                                                                                                                                                                     -GDYEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               172
                                                                                                                                                                                                   137
                                                                                                                                                                                                                                 84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             63
                                                                                                                                                                                                                                                                                              6
AC DT DT DT DT DE COC OC RN
                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                        Ω
                                                                                                                                                                                                                                                                                                                                                                        뮰
                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                  ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
```

```
Q9RPY9
                                                                                                                                                                                                                                          RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                           01-MAY-2000 (TrEMBLrel.
01-MAY-2000 (TrEMBLrel.
01-MAR-2003 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Domann E., Dominguez-Bernal G., Duchaud E., Durant L., Dussurget O., Entian K.-D., Fshh H., Garcia-del Portlio F., Garrido P., Gautier L., Goebel W., Gomez-Lopez N., Hain T., Hauf J., Jackson D., Jones L.-M., Kaerst U., Kreft J., Kuhn M., Kunst F., Kurapkat G., Madueno E., Maitournam A., Mata Vicente J., Ng E., Nedjari H., Nordsiek G., Novella S., de Pablos B., Perez-Diaz J.-C., Purcell R., Remmel B., Rose M., Schlueter T., Simoes N., Tierrez A., Varquez-Boland J.-A., Voss H., Wehland J., Cossart P.;
                            NCBI_TaxID=1639;
                                                   Listeria monocytogenes
Bacteria; Firmicutes; I
                                                                                                                                                                                                       Q9RPY9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pfam; PF00672; HAMP; 1.
Pfam; PF02518; HATPase_C; 1.
Pfam; PF00512; HiskA; 1.
PRINTS; PR00344; BCTRLSENSOR.
SEQUENCE
                                                                                        LISK OR LMO1378
                                                                                                         Lisk (Two-component sensor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SMART;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Science 294:849-852(2001).
EMBL; AL596168; CAC96646.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Glaser P., Frangeul L., Buchrieser C., Rusniok C., Baquero F., Berche P., Bloecker H., Brandt P., Chal Charbit A., Chetouani F., Couve E., de Daruvar A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A. STRAIN-CLIP 11262
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Listeria innocua.
Bacteria; Firmicutes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SMART;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Two-component se
LISK OR LIN1415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-DEC-2001 (TrEMBLrel. 19, 01-MAR-2003 (TrEMBLrel. 23,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro; IPR003661;
InterPro; IPR005467;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      InterPro; IPR003660;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ListiList; LIN01415;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Comparative genomics of Listeria species.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PubMed=11679669;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NCBI_TaxID=1642;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     InterPro; IPR004358;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro;
                                                                                                                                                                                                                                          11
                                                                                                                                                                                                                                                                                                                                    131
                                                                                                                                                                                                                                                                                                                                                                         360
                                                                                                                                                                                                                                                                                                  407
                                                                                                                                                                                                                                                                                                                                                                                                                                                308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; SM00304; HAMP;
; SM00387; HATPas
; SM00388; HisKA;
                                                                                                                                                                                                                                                                                                                                                                                                             78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Complete p: 483 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATILYKNKHLTDLKES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PS50109; HIS_KIN; 1.
                                                                                                                                                                                                                                                                                            DVRDYGEGISQEEIDKIFN-
                                                                                                                                                                                                                                                                                                                                 DEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEK 164
                                                                                                                                                                                                                                                                                                                                                                       DTDLRALIQHNHLEQILIIIMDNAVKYSGDGTEV----DMHVYKEQKQIHI--
                                                                                                                                                                                                                                                                                                                                                                                                                                              KKLVQEMLDLSRAEQISQTKE----LQITDVNATVEQV--
                                                                                                                                                                                                                                                                                                                                                                                                           HETITVWKAYDY-----TTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IPR005467;
                                                                                                                                                                                                       PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HATPase_c; 1.
HisKA; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              proteome.
A; 55501 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Serovar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8.88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATPbind_ATPase
Bact_sens_pr_C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 His_kinase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    His_kinA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       HAMP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       histidine
                                                     Bacillales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Bacillales;
                                                                                                                           13,
23,
                                                                                                           histidine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       29;
                                                                                                                           Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 87; DB
Pred. No. 18;
29; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Last sequence update)
Last annotation update)
ine kinase.
                                                                                                                                                                 Created)
                                                                                                                                                                                                                                                                                                -RFYRVDKARSREK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              F5712DF5304C32D2 CRC64;
                                                     Listeriaceae; Listeria
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Listeriaceae; Listeria
                                                                                                           kinase)
                                                                                                                                                                                                     483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 16;
                                                                                                                                              update)
                                                                                                                         update)
                                                                                                                                                                                                                                                                                                438
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Chakraborty
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 483;
                                                                                                                                                                                                                                                                                                                                                                                                                                                -RRNFEVMYENFTFT-LKED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Dehoux P.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                         406
                                                                                                                                                                                                                                                                                                                                                                                                                                              359
```

•;

```
RESULT
QBK3S1
ID QE
AC QE
DT QE
DT QE
CREATER P
GN P
OS M
                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                              몆
                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                 RA Glaser P., Frangeul L., Buchrieser C., Rusniok C., Amend A.,
RA Baquero F., Berche P., Bloecker H., Brandt P., Chakraborty T.,
RA Charbit A., Chetouani F., Couve E., de Daruvar A., Deboux P.,
RA Domann E., Dominguez-Bernal G., Duchaud E., Durant L., Dussurget O.,
RA Entlan K.-D., Fsihi H., Garcia-del Portlilo F., Garrido P.,
RA Gautier L., Goebel W., Gomez-Lopez N., Hain T., Hauf J., Jackson D.,
RA Jones L.-M., Kaerst U., Kreft J., Kuhn M., Kunst F., Kurapkat G.,
RA Madueno E., Waltournam A., Mata Vicente J., Ng E., Nedjari H.,
RA Nordsiek G., Novella S., de Pablos B., Perez-Diaz J.-C., Purcell R.,
RA Vazquez-Boland J.-A., Yoss H., Wehland J., Cossart P.;
"Comparative genomics of Listeria species.";
L. Science 294:849-852(2001).
                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local (
                                       OBK3S1
OBK3S1;
O1-OCT-2002 (TrEMBLrel. 2
O1-OCT-2002 (TrEMBLrel. 2
O1-MAR-2003 (TrEMBLrel. 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pfam; PF02518; HATPase_C; 1.
Pfam; PF00512; H1sKA; 1.
PFINTS; PF00344; BCTRLSENSOR.
SWART; SW00304; HAMP; 1.
SWART; SW00387; HATPase_C; 1.
SWART; SW00388; H1sKA; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     InterPro;
InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Cotter P.D., Emerson N., Gahan C.G., Hill C.;
"Identification and disruption of listk, a genetic
two-component signal transduction system involved
and virulence in listeria monocytogenes.";
J. Bacteriol. 181:6840-6843(1999).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL: AF139908; AAF03933.1; -.
EMBL: AL591978; CAC99456.1; -
ListLilist; LM001378; -
InterPro; IPR003594; ATPbind_ATPase.
InterPro; IPR004358; Bact_sens_pr_C.
InterPro; IPR003660; HAMP.
                                                                                                                                                                                                                                                                                                                                                                                                                                         PROSITE; PS50109; HIS_KIN Kinase; Phosphorylation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE-21537279; PubMed-11679669;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRAIN-LO28 / Serovar 1/2c;
MEDLINE-20011355; PubMed-10542190;
                                                                                                                                                                                                                                                                                                                                                                                                                            Complete proteome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A
 musculus (Mouse).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SIMILARITY: TO OTHER PROKARYOTIC SENSORY TRANSDUCTION HISTIDINE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KINASES
                              protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pro; IPR003661; H
Pro; IPR005467; H
PF00672; HAMP;
                                                                                                                                                                              407
                                                                                                                                                                                                                                     360
                                                                                                                                                                                                                                                                                               308
                                                                                                                                                                                                                                                                                                                            18
                                                                                                                                                                                                                                                                                                                                                         37;
                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                          PS50109; HIS_KIN; 1.
                                                                                                                                                                             DVRDYGEGISQEEIDKIFN--RFYRVDKARSREK 438
                                                                                                                                                                                                        DEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEK 164
                                                                                                                                                                                                                                    DTDLRALIQHNHLEQILIIIMDNAVKYSGDGTEV----DMHVYKEQKQIHI-----
                                                                                                                                                                                                                                                                 HETITVWKAYDY - - - - - TTENGIKYETOGTRTQTFEDVFVFSDYKNCDVIFVPKERGS
                                                                                                                                                                                                                                                                                               KKLVQEMLDLSRAEQISQTKE----LQITDVNATVEQV----RRNFEVMYENFTFT-LKED
                                                                                                                                                                                                                                                                                                                         KSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATILYKNKHLTDLKES
                                                                                                                                                                                                                                                                                                                                                                                                                 483 AA;
                                                                                                     PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 / Serovar 1/2a
                                                                                                                                                                                                                                                                                                                                                                                                                 55460 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         His_kinA.
His_kinase.
                                                                                                                                                                                                                                                                                                                                                                     24.0%;
                                                                                                                                                                                                                                                                                                                                                                                 8.8%;
                                             22,22
                                                                                                                                                                                                                                                                                                                                                                                                                                           Sensory transduction; Transferase
                                                                                                                                                                                                                                                                                                                                                         29;
                                             Last sequence update)
Last annotation updat
                                                                          Created)
                                                                                                                                                                                                                                                                                                                                                                     Score 87; Pred. No.
                                                                                                       PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                 B477C2C3D653DC95 CRC64;
                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                       604
                                                                                                                                                                                                                                                                                                                                                                  DB
18;
                                                                                                       ₽
                                                                                                                                                                                                                                                                                                                                                                                   16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   genetic locus
                                                                                                                                                                                                                                                                                                                                                       58;
                                                                                                                                                                                                                                                                                                                                                                                   Length 483
                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       stress
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   encoding
                                                                                                                                                                                                                                                                                                                                                       30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       tolerance
                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   þ
                                                                                                                                                                                                                                                                  130
                                                                                                                                                                                                                                     406
                                                                                                                                                                                                                                                                                               359
                                                                                                                                                                                                                                                                                                                            77
```

S

15 DAWKSL---

-QQDQNK---RYYLAQATQTTDGV-

Conservative

30;

Indels

73;

Gaps

12;

WGEE

```
Q81218
Q81218
ID Q8121
DT Q8121
DT 01-MA
DT 01-M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                    RA Hall N. Pain A., Berriman M., Churcher C., Harris B., Harris D.,
RA Mungall K., Bowman S., Atkin R., Baker S., Barron A., Brooks K.,
RA Buckee C.O., Burrows C., Cherevach I., Chillingworth C.,
RA Chillingworth T., Christodoulou Z., Clark L., Clark R., Corton C.,
RA Cronin A., Davies R., Davis P., Dear P., Dearden F., Doggett J.,
RA Cronin A., Davies R., Davis P., Dear P., Dearden F., Doggett J.,
RA Feltwell T., Goble A., Goodhead I., Gwilliam R., Hamiln N., Hance Z.,
RA Harper D., Hauser H., Hornsby T., Holroyd S., Horrocks P.,
RA Humphray S., Jagels K., James K.D., Johnson D., Kerhornou A.,
RA Knights A., Konfortov B., Kyes S., Larke N., Lawson D., Lennard N.,
RA Knights A., Konfortov B., Kyes S., Larke N., Lawson D., Lennard N.,
RA Knights A., Maddison M., Mclean J., Mooney P., Moule S., Murphy L.,
RA Oliver K., Ormond D., Price C., Quail M.A., Rabbinowitsch E.,
RA Rajandream M.A., Rutter S., Rutherford K.M., Sanders M., Simmonds M.,
Ra Rajandream M.A., Rutter S., Rutherford K.M., Sanders M., Stevens K.,
RA Rajandream M.A., Ruther S., Rutherford K.M., Sanders M., Stevens K.,
RA Taylor K., Tivey A., Unwin L., Whitehead S., Woodward J.,
RA Segger K., Sharp S., Smith R., Squares R., Squares S., Stevens K.,
RA Taylor K., Tivey A., Unwin L., Whitehead S., Woodward J.,
RA Seguence of Plasmodium falciparum chromosomes 1, 3-9 and 13.";
RL Mature 419:527-531(2002).

CR EMBL; AL034557: CAD49096.1; -.

SQ SEQUENCE 3467 AA; 398212 MW; E8FCBA37025989D2 CRC64;
  Query Match
Best Local S
Matches 46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Chureau C., Pissette M., Bourdet A., Ba
Jones L., Eggen A., Avner P., Duret L.;
"Comparative sequence analysis of the X-
mouse, human and bovine.";
Genome Res. 12:894-908(2002).
EMBL; AJ421480; CAD33962.1;
InterPro; IPR01254; Ser_protease_Try.
SMART; SW00020; Tryp_SPC; 1.
PROSITE; PS50240; TRYPSIN_DOM; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q81218;
Q81218;
Q1-MAR-2003
Q1-MAR-2003
Q1-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Plasmodium falciparum (isolate 3D7)
Eukaryota; Alveolata; Apicomplexa;
NCBI_TaxID=36329;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Erythrocyte VAR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eukaryota; Metazoa;
Mammalia; Eutheria;
NCBI_TaxID=10090;
[1]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=22040331; PubMed=12045143;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            24 QNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNAT-----ILYKNKHLTDLKES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         HNYFTTLASSDYLLRILQGNVGVSPQTTHTNNVPTIFNFSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HETITYWKAYDY - - - TTENGIKYETQGTRTQTFEDVFVFSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         falciparum (isolate 3D7).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Protease; Serine pr
604 AA; 67709 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Protease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (TrEMBLrel. 23, Created)
(TrEMBLrel. 23, Last sequence update)
(TrEMBLrel. 23, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PubMed-12368867;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chordata;
Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8.7%;
                             8.7%;
21.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  protein 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WIKQFI-----KVSKKLLNPTRSLHCRTLYENEYVPQIRHS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          protease.
     Pred. No. 2.1e
0; Mismatches
                                      Score 86.5;
Pred. No. 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 86.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5542092EBFEA8ACD CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (PfEMP1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                       No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Haemosporida; Plasmodium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 X-inactivation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Barbe V.,
DB 5;
2.1e+02;
nes 63;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Cattolico
                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 center region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       19;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ۵.
```

```
RESULT 15
Q8F3F8
ID Q8F3F
AC Q8F3F
AC Q8F3F
DT 01-MA
DT 01-MA
DT 01-MA
DT 01-MA
CONTRACTOR
CONTRACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 14

Q8FQ68

ID Q8FQ6

AC CCOYPT

OX NCBI.

RN [1]

RN [1]

RN SEQUE

RA Kawai

RA Kawai

RA Kawai

RA Kawai

RA Kawai

RA USuda

RT The

SUDmi

DR EMBL;

KW HYDOT

SEQUE

SEQUE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               , B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      日
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 40
                                                                                                                                                                                                                                                     Q8F3F8;
01-MAR-2003 (TrEMBLrel. 23, Created)
01-MAR-2003 (TrEMBLrel. 23, Last sequence update)
01-MAR-2003 (TrEMBLrel. 23, Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRAIN-YS-314 / AJ 12310 / DSM 44549 / JCM 11189;
STRAIN-YS-314 / AJ 12310 / DSM 44549 / JCM 11189;
STRAIN-YS-314 / AJ 12310 / DSM 44549 / JCM 11189;
KAWATADANASI Y., YAMAZAKI J., Hino Y., Kikuchi H., Nakamura Y.,
Ikoo K., Suzuki M., Mashima J., Itoh T., Yamagishi A., Nishio Y.,
Usuda Y., Sugimoto S.;
"The entire genomic sequence of Corynebacterium efficiens YS-314.";
Submitted (MAY-2002) to the EMBL/GenBank/DDBJ databases.
EMBL; AP005218; BAC18075.1;
Hypothetical protein; Complete proteome.
Hypothetical protein; Complete proteome.
                                                                                                        Leptospira interrogans.
Bacteria; Spirochaetes;
NCBI_TaxID=173;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Corynebacterium efficiens.
Bacteria; Actinobacteria; Actinobacteridae; Actinomycetales;
Corynebacterineae; Corynebacteriaceae; Corynebacterium.
NCBI_TaxID=152794;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-MAR-2003 (TrEMBLrel.
01-MAR-2003 (TrEMBLrel.
01-MAR-2003 (TrEMBLrel.
                        STRAIN=56601 / Serogroup Icterohaemorrhagiae / Serovar lai;
                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                          LA2448
                                                                                                                                                                                                                                  Putative outermembrane
                                                                                                                                                                                                                                                                                                                                                                                     Q8F3F8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conserved hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q8FQ68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q8FQ68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EQUENCE FROM N.A.
s:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                274 RELTSDEDIEEFLTTLRAYPDKSRTVIKYGLQGTITLEQNRRLEEGLASLEDIF-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RVWFSGAPETTDFHDLDPTRVGGEVNSGNVLVVTASKGHAEVEQVPVGKWVFEAL----N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NCDVIFVPKERGSD----EGDYEL 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KHLTDLKESHETITVWKAYDYTTENGIKYETQGTRT---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RYYLAQATQTTD------GVWGE--EFTCVSVTAEK-----IGKKKLNATILYKN 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KEKFD---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FCREREKKEEVVEKKCKKDHEGCNKPNT--KGNHGCVSACKDYEEYISTKKKQYNTQ---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ---ASLKPRERTTDLVLEPGDEEL 348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EKVKNNSEYWDKPNKTYTNSDLEKKCECKPQP 1560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EKTVRN------VYTDS-----SCKPAP 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TQTFEDVFVFSDYKNCDVIFVPKERGSDEGDYELWVSEDKIDKIPD-CCKFTMAYFAQQQ 162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FTCVSVTAEKIGKKKLNATILYKNKHLTDLKESHETITVWKAY-DYTTENGIKYETQGTR 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EIWEGMLCALTHEIDEEEKNKIKSTYSYDQLKKTTNGTTPLEKFAERPQFLRWFTEWSDE
                                                                                                                                                                                                                                                                                                                                                                                     PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8.7%; Score 86; DB
27.8%; Pred. No. 17;
tive 15; Mismatches
                                                                                                                                                                                                                               protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      23, Createq)
23, Last sequence update)
23, Last annotation update)
                                                                                                                                            Spirochaetales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ---IDKNKGNEE--YENYKDKEAHDYLKDKCFPGTCDY----M 1528
                                                                                                                                                                                                                                                                                                                                                                                  PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 16;
17;
                                                                                                                                      Leptospiraceae;
                                                                                                                                                                                                                                                                                                                                                                                  ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 391;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -QTFEDVFVFSDYK 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      46;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1434
```

```
Q
                                                           밁
                                                                                      Ş
                                                                                                                      밁
                                                                                                                                                 δÃ
₽
                                                                                                                                                                                                                                             SQ
                                                                                                                                                                               Query Match
Best Local S
Matches 38
                                                                                                                                                                                                                                          Submitted (MAR-2002) to the EMBL/GenBank/DDBJ databases EMBL; AE011413; AAN49647.1; -. Complete proteome. Complete proteome. 428 AA; 48954 MW; 0F7DD095D1BA1C7C CRC64;
138
                              103
                                                            78
                                                                                         65
                                                                                                                       29
                                                                                                                                                                                  38;
                                                                                                                                       5 ANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATI 64 | : | : | : | : | : | 64
                                                                                                                                                                                                 Similarity
                                                      LFDNRLKTLPKEIGQLKNIQELNLSSNQLTILPKEIGKLENLQRLDLYDNRLTILPIEIG 137
KLQNLQTLYLSSN----QLTTLPRESGKLENLQELNLSDNQLTTLP
                            RTOTFEDVFVFSDYKNCDVIFVPKERGSDEGDYELWVSEDKIDKIP
                                                                                                                      ADEVKPGTYMDLTKALQNPLNVRVL------DLSGQNFTTLPKEIEQL--KNLQKLY
                                                                                                                                                                                  Conservative
                                                                                         ----KHLTDLKESHETITVWKAYDYTTENGIK---YETQGT------
                                                                                                                                                                               8.6%; Score 85.5; I
22.9%; Pred. No. 21;
tive 31; Mismatches
                                                                                                                                                                                                               DB 16;
                                                                                                                                                                                  60;
                                                                                                                                                                                                             Length
                                                                                                                                                                                  Indels
                            148
                                                                                                                                                                                                                 428;
                                                                                                                                                                                  37;
                                                                                                                                                                                 Gaps
                                                                                          102
                                                                                                                       77
```

Search completed: August 1, 2003, 12:20:01 Job time: 54.3467 secs

š

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Minimum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Total number
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
   13
13
13
13
13
13
13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score
 seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-087-195-8
989
1 NPTWANEAKLGSY
   100.0
27.05.0
110.00
8.7.2
8.7.2
8.7.2
8.7.2
7.7.3
7.7.3
7.7.3
7.7.3
7.7.3
7.7.3
7.7.3
7.7.3
7.7.3
7.7.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            127863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             August 1,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SwissProt_41:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NPTWANEAKLGSYQDAWKSL....EKTVRNVYTDSSCKPAPAQN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Copyright
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        seqs, 47026705 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2000000000
 2003, 12:15:03; Search time 11.0933 Seconds (without alignments) 771.532 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GenCore version (c) 1993 - 2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         뮵
VSMG_TRYBB
Z180, HOMAN
INVL_PEA
RB4A_ECHMU
C4BP_BOVIN
OPPE_MYCPN
ATRX_HUMAN
CFAH_MOUSE
PCN3_SULTO
PEPI_YEAST
POLG_ECO1F
NORE_NEIMB
SYQ_XYLFA
MX44_HUMAN
Y331_MYCGE
GCTA_ACIFE
GC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    HBPM_RHIAP
HBP2_RHIAP
HBP1_RHIAP
RS4_THEVO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Compugen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           127863
               Ogujw8 homo sapien Q43089 pisum sativ Oggp33 echinococcu 28065 bos taurus P75551 mycoplasma P46100 homo sapien P06909 mus musculu Q973f5 sulfolobus P32319 saccharomyc Ogi734 e genome po Q9k0m8 neisseria m Ogpdn xylella fas Q9y6r4 homo sapien P47573 mycoplasma Q59111 acidaminoco Q66577 e genome po P44066 haemophilus Q70695 african hor P47700 mycoplasma Q17388 caenorhabdi P54697 dictyosteli Q3wxr9 thermotoga P37198 homo sapien P17955 mattus norv Q63850 mus musculu Q9wxr9 thermotoga P37198 homo sapien P17987 human herpe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   077422 rhipicephal
077421 rhipicephal
077420 rhipicephal
077420 rhipicephal
097b95 thermoplasm
p26334 trypanosoma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Description
   saccharomyc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 1
HBPM_RHIAP
ID HBPM_R
AC 077422
DT 30-MAY
DT 30-MAY
DT 30-MAY
DT 30-MAY
DT MAIPIC
OC EUKARY
OC PARASI
OX NCBLT
RN [1]
RP SEQUEN
RC TISSUE
RX MEDLIN
RA PAESEN
RT dimens
RI MO1. C
CC -!- FU
CC SU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.

TISSUE-Salivary gland;

MEDLINE-9288454; PubMed-10360182;

MEDLINE-9288454; PubMed-10360182;

Paesen G.C., Adams P.L., Harlos K., Nuttall P.A., Stuart D.I.;

"Tick histamine-binding proteins: isolation, cloning, and three-dimensional structure.";

dimensional structure.";

MOI. Cell 3:661-671(1999).

MOI. Cell 3:661-671(1999).

TUNCTION: BINDS HISTAMINE WITH A HIGH-AFFINITY. THE ABILITY TO OUTCOMPETE HISTAMINE RECEPTORS INDICATES THAT ITS FUNCTION IS SUPPRESS INFLAMMATION DURING BLOOD FEEDING.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
30-MAY-2000 (Rel. 39, Last annotation update)
Male-specific histamine-binding sallwary protein precursor (MS-HBP)...
Rhipicephalus appendiculatus (Brown ear tick).
Eukaryota; Metazoa; Arthropoda; Chellcerata; Arachnida; Acari;
Parasitiformes; Ixodida; Ixodidae; Rhipicephalus.
MCBI_TaxID=34631;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         HBPM_RHIAP
077422;
```

ö

0.	44	43	42	41	40	39	38	37	36	35	3 4
74.5	74.5	74.5	74.5	74.5	74.5	75	75	75	75.5	75.5	76
7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.6	7.6	7.6	7.7
1549	1549	1475	1473	321	199	448	415	405	1536	662	2261
H	1	<u>, , , , , , , , , , , , , , , , , , , </u>	1	ר	Ъ	1	1	L	_	_	H
YJW2_YEAST	YIR3_YEAST	APU_THETY	TOP2_ARATH	VG74_HSVSA	CN06_HUMAN	RMUC_ZYMMO	ERK1_DICDI	NQRF_NEIMA	Y984_THEMA	MTR1_HUMAN	ABC1_MOUSE
P40890 saccharomyc				Q01035 herpesvirus	Q8taal homo sapien		P42525 dictyosteli				P41233 mus musculu

ALIGNMENTS

STANDARD;

200 ξ

120	61 NATILYKNKHLTDLKESHETITYWKAYDYTTENGIKYETOGTRTOTFEDVFVFSDYKNCD 1	Qγ	
78	19 NPTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKL 7	В	
60	- [Qy	
0;	Ouery Match 100.0%; Score 989; DB 1; Length 200; Best Local Similarity 100.0%; Pred. No. 1.2e-78; Matches 182; Conservative 0; Mismatches 0; Indels 0; Gaps	Ma Ma	
	SEQUENCE 200 AA; 22851 MW; C46A1C8C6BCAA008 CRC64;	SQ	
	DISULFID 137 169 BY SIMILARITY.	FΤ	
	DISULFID 65 193 BY SIMILARITY.	FT	
	PROTEIN.	FΤ	
	CHAIN 19 200 MALE-SPECIFIC HISTAMINE-BINDING SALIVARY	FΤ	
		FT	
	Signal.	ΚW	
	ProDom; PD152455; His_binding; 1.	DR	
	Pfam; PF02098; His_binding; 1.	DR	
	InterPro; IPR002970; His_binding.	DR	
	HSSP; 077421; 1QFT.	DR	
	EMBL; U96082; AAC63108.1;	DR	
:		റ്റ	
	or send an email to license@isb-sib.ch).	င္ပ	
nce/	entities requires a license agreement (See http://www.isb-sib.ch/announce/	ဂ္ဂ	
cial	modified and this statement is not removed. Usage by and for commercial	റ്റ	
WBY	use by non-profit institutions as long as its content is in no	င္ပ	
its	the European Bioinformatics Institute. There are no restrictions on	റ്റ	
on -	between the Swiss Institute of Bioinformatics and the EMBL outstation -	റ്റ	
tion	This SWISS-PROT entry is copyright. It is produced through a collaborat	റ്റ	
		ဂ္ဂ	
	-I- SUBCELLULAR LOCATION: Secreted.	റ്റ	
	OUTEREDS INFLIMINATION DURING BLOOD FEEDING.	5	

밁 δλ B VΩ 밁

11;

Gaps

175

119

188

```
STRAND
STRAND
TURN
                                                                                                                                                                                                                                                                    DISULFID DISULFID
   TURN
STRAND
                                 TURN
STRAND
                                                                                TURN
                                                                                             TURN
STRAND
                                                                                                                                                                                                      TURN
HELIX
HELIX
HELIX
                                                                                                                                                                                                                                                                                                                                 ProDom; PD152455; His Signal; 3D-structure SIGNAL 1
                                                                                                                                                                                                                                                                                                                                                         EMBL; U96081; AAC63107.1; -.
PDB; 1QFT; 19-APR-00.
PDB; 1QFV; 19-APR-00.
InterPro; IPR002970; His_binding.
Pfam; PF02098; His_binding; 1.
Propon; PD152455; His_binding; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   the European Bioinformatics Institute. The use by non-profit institutions as long a modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Female-specific histamine-binding protein 2 precursor (FS-HBP2
Rhipicephalus appendiculatus (Brown ear tick).
Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari;
Parasitiformes; Ixodida; Ixodidae; Rhipicephalus.
                                                                                                                                                                                           TURN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          _RHIAP
                                                                STRAND
                                                                                                                              STRAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TISSUE=Salivary gland; MEDLINE=99288454; Publ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HBP2_RHIAP 077421;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Paesen G.C., Adams P.L., Harlos K., Nuttall P.A., "Tick histamine-binding proteins: isolation, clonding administration, clonding proteins."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=34631;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A., AND X-RAY CRYSTALLOGRAPHY (1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SUBCELLULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VIEVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKPAPA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKPAPA 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182
   138
23
27
31
31
36
42
42
48
57
59
59
11
97
11
91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PubMed=10360182;
 1167
24
30
30
33
41
45
53
58
61
61
61
61
61
61
63
63
10
64
11
10
66
                                                                                                                                                                                                                                                                                                                 19
190
                                                                                                                                                                                                                                                                                                  FEMALE-SPECIFIC HISTAMINE-BINDING PROTEIN 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          190 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              There are no restrictions ng as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            precursor (FS-HBP2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cloning,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Stuart
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    bу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ANGSTROMS)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        three
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      commercia:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            138
 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HBP1_RHIAP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
 DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TURN
STRAND
TURN
STRAND
STRAND
TURN
HELIX
TURN
TURN
STRAND
STRAND
TURN
STRAND
                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EM the European Bioinformatics Institute. There are no restruse by non-profit institutions as long as its content use by non-profit institutions as long as its content modified and this statement is not removed. Usage by and
                                                                                                                                                                                                                                                                                                       SEQUENCE (AND TAKEN THE PROPERTY OF THE PROPER
                                                                                                                                      EMBL; U96080; AAC63106.1;
HSSP; 077421; 10FT.
                                                                                                                                                                                     entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                30-MAY-2000 (Rel. 39, Created)
30-MAY-2000 (Rel. 39, Last sequence update)
30-MY-2000 (Rel. 40, Last annotation update)
16-CCT-2001 (Rel. 40, Last annotation update)
Female-specific histamine-binding protein 1 precursor (FS-HBP1
Rhipicephalus appendiculatus (Brown ear tick).
Eukaryota, Metazoa, Arthropoda; Chelicorata; Arachnida; Acari;
Parasitiformes; Ixodida; Ixodidae; Rhipicephalus.
                                                                                            ProDom;
                                                                                                          Pfam; PF02098; His_binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            HBP1_RHIAP 077420;
                                                                                                                     InterPro; IPR002970; His_binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=34631;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          74;
                                                                                            PD152455;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DVIYVPGTDGNEEG-YELWTTD--YDNIPANCLNKFNEYAVGRE--TRDVFT-SAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IQAEFLEMNNADTNMQFATEKVTAVKMYGYNRENAFRYETED---GQVFTDVIAYSD-DNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PDWADEAANGAHQDAWKSLKADVENVYYMVKATYKNDPVWGNDFTCVGVMANDVNEDEKS 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 123
135
136
137
38
143
2
157
174
177
182
188
21464 MW;
   66
137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   122
126
136
138
152
160
165
175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STANDARD;
                                                                                            His_binding; 1
 187
166
                                           18
190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     33.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          29;
1.
BY SIMILARITY.
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 331.5; DB Pred. No. 7.5e-229; Mismatches 6
                                             POTENTIAL.
FEMALE-SPECIFIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6923A3E902552B6F CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           190
                                                                                                                                                                                                   (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DB 1;
                                              HISTAMINE-BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        62;
                                                                                                                                                                                                                                                                and the EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length
                                                                                                                                                                                                                                                                                                                                           THE ABILITY TO
                                                                                                                                                                                                                                               restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (FS-HBP1).
                                                                                                                                                                                                                     and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       190;
```

a collaboration

9

ö

for

commercia

no

PROTEIN

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S
                                                                                                                                                                                                                                              Kawashima T., Amano N., Koike H., Makino S.-I., Higuchi S.,

Kakashima-Ohya Y., Watanabe K., Yamazaki M., Kanehori K., Kawamoto T.

A Nunoshiba T., Yamamoto Y., Aramaki H., Makino K., Suzuki M.;

"Archaeal adaptation to higher temperatures revealed by genomic greeness of Thermoplasma volcanium.";

Proc. Natl. Acad. Sci. U.S.A. 97:14257-14262(2000).

C. I- FUNCTION: One of the primary rRNA binding proteins, it binds directly to 16S rRNA where it nucleates assembly of the body of the 30S subunit (By similarity).

C. I- FUNCTION: With SS and SI2 plays an important role in translation accuracy (By similarity).

C. I- SUBUNIT: Part of the 30S ribosomal subunit. Contacts protein SS.

C. The interaction surface between S4 and S5 is involved in control of translational fidelity (By similarity).

C. I- SIMILARITY: BELONGS TO THE S4P FAMILY OF RIBOSOMAL PROTEINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                EMBL; AP000992; BAB59704.1; -. HANAP; MF 01306; -; 1.
InterPro; IPR001912; Ribosomal_S4.
InterPro; IPR002942; S4.
InterPro; IPR005710; S4_9_euk_arch.
Pfam; PF00163; Ribosomal_S4; 1.
Pfam; PF01479; S4; 1.
SMART; SM00363; S4; 1.
TIGREAMS; TIGR01018; IPSD_arch; 1.
TIGREAMS; TIGR01018; IPSD_arch; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    28-FEB-2003 (Rel. 41, L. 28-FEB-2003 (Rel. 41, L. 28-FEB-2003 (Rel. 41, L. 30S ribosomal ----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             _THEVO
                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A. STRAIN-GSS1 / DSM 4299 / JCM 9571; MEDLINE-20570466; PubMed-11121031;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RPS4P
                                                                                                                                                      use by non-profit institutions as long modified and this statement is not removed entitles requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                               This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Thermoplasmataceae; Thermoplasma.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Thermoplasma volcanium. Archaea; Euryarchaeota; Thermoplasmata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RS4_THEVO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE
             ROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local
                                                                                                                                                                                                     s SWISS-PROT entry is copyright. It is produced through a collaboration ween the Swiss Institute of Bioinformatics and the EMBL outstation - European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          B-2003 (Rel. 41, Last sequence up
B-2003 (Rel. 41, Last annotation
ibsemal protein S4P.
OR TV0562 OR TVG0550709.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         l Similarity
70; Conser
            PS00632; RIBOSOMAL_S4; PS50889; S4; 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LNATILYKNKHLTDLKESHETITVMKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIG--KKK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           YVIXALGPDGSGAG-YELWAT-DYTDVPASCLEKFNEYAA---GLPVRDVYT-SDCLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTDSSCKP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VEAWFMFMNNADTVYQHTFEKATPDKMYGYNKENAITYQTED - - GQVLTDVLAFSD - DNC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PVWADEAANGEHQDAWKHLQKLVEENYDLIKATYKNDPVWGNDFTCVGTAAQNLNEDEKN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STANDARD;
RNA-binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       21370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 27.0%; Score 267.5; 39.3%; Pred. No. 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Œ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       855BE151A90053B1
rRNA-binding; Complete proteome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  200
                                                                                                                                                                 (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.6e-16;
77;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Thermoplasmatales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ₹
                                                                                                                                                                                          as its content
                                                                                                                                                                               Usage
                                                                                                                                                                                                                                                                                                  Contacts protein S5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                ğ
                                                                                                                                                                                and
                                                                                                                                                                                                                                                                                                                            translational
                                                                                                                                                                                                                                                                                                                                                                                                                       Kawamoto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       11;
                                                                                                                                                                                for
                                                                                                                                                                                                                                                                                        control
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                commercia.
                                                                                                                                                                                                                                                                                                                                                   of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 59
                                                                                                                                                                                            way
             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
```

PROPEP DISULFID DISULFID

HYDROPHOBIC, REMOVED BY SIMILARITY. BY SIMILARITY. N-LINKED (GLCNAC...

VARIANT SURFACE

REMOVED

DURING

MATURATION

GLYCOPROTEIN MITAT

CHAIN

SEQUENCE LIPID CARBOHYD

529

Š

506 57284

¥

/FTId=CAR_000142.
GPI-ANCHOR (BY SIMILARITY).

A1FB291B900502F4 CRC64;

```
RESULT
VSM6_TF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local S
Matches 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DOMAIN
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TRYBB.
                                                                                                                                                                                                 entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                           This SWISS-PROT entry is copyright. It is produced through a between the Swiss Institute of Bioinformatics and the EMBI the European Bioinformatics Institute. There are no restrict
                                                                                                                                                                                                                                                                                                                                                                                      J. MOL. BIO1. 221:823-835(1991).

-I- FUNCTION: VGG FORMS A COAT ON THE SURFACE OF TYPANOSOME EVADES THE IMMUNE RESPONSE OF THE A SERIES OF ANTIGENICALLY DISTINCT VSGS FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Variant surface glycoprotein MITAT 1.6 Trypanosoma brucei brucei.
                                                                                        GlycoSuiteDB; P26634; -.
InterPro; IPR001812; Trypan_glycop; 1.
Pfam; PF00913; Trypan_glycop; 1.
Glycoprotein; Antigen; Trypanosomia
                                                                                                                                                                      EMBL; X56764; CAA40083.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Variant specific glycoprotein of domains each having an independent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Carrington M., Miller N., Blum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRAIN-ISOlate MIAG 151;
MEDLINE-92046037; PubMed-1942032;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Euglenozoa;
NCBI_TaxID=5702;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-MAY-1992
01-MAY-1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    P26334;
                                                                             SIGNAL
                                                                                                                                                      PIR; S18453; S18453
                                                                                                                                                                                                                                                                                                                                                                                                                                                     residues.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Turner M.J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VSM6_
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6-OCT-2001
                                                                                                                                                                                                                                                                                                                            A SOLUBLE FORM IS PI-PLC.
                                                                                                                                                                                                                                                                                                                                         SUBCELLULAR LOCATION: Attached A SOLUBLE FORM IS RELASED FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TRYBB_
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 40;
                                                                                                                                                                                                                                                                                                                                                                           GENES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QYEDTIAY - - YENSPIANELHPIRQALLSPAERVKEEAEKEAAASED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CVSVTAEKIGKKKLNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WRSEAMLSSIRSQARYLRARLRASDANAQKQLERMIKRLSRYKILSDKATLDDV-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WANEAKLGSYO------DAWKSLOO--DQNKRYYLAQATQTTDGVWGEEFT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -FEDVFVFSDYKNCDV------IFVPKERGSDEGDYELWVSED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -LSLTVENILDRRLQTIVFKKNLALSE-KQARQLIT----HGHITVNGRRVTVPGMLVEA 149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               <u>Α</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22, Created)
22, Last sequence update)
40, Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             170 ;
23161 MW;
506
529
170
214
456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10.0%;
                                                                                        Trypanosomiasis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  independently
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Kinetoplastida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ж.
:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             71D8DE99D5F122F7 CRC64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Trypanosoma bruce1 consists of two
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99;
                                                                                                                                                                                                                                                                                                                                          to the membrane RUPTURED CELLS E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  conserved
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Roditi I., Wiley
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    529
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     update)
precursor (VSG).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Trypanosomatidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0
                                                                                                                                                                                                                                           There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 1;
0.099;
                                                                                        GPI-anchor; Membrane; Signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 57;
                                                                                                                                                                                                                                Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                pattern
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                      THE PARASITE. THE HOST BY EXPRESSING AN ESTIMATED 1000
                                                                                                                                                                                                                                                                                                                                     , by
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                 ğ
                                                                                                                                                                                                                                                                                                                                          Y a C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             o
                                                                                                                                                                                                                                                              restrictions on
                                                                                                                                                                                                                                                                                                                                         GPI-anchor.
HE ACTION OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of cysteine
                                                                                                                                                                                                                                   and
                                                                                                                                                                                                                                                                               EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Trypanosoma.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 42;
                                                                                                                                                                                                                                   for
                                                                                                                                                                                                                                                                                            collaboration
                                                                                                                                                                                                                                                                               outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                  ទ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
```

1;

Length

529

```
RESULT RE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           日
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     멂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                  InterPro; IPR001909; KRAB.
InterPro; IPR007087; Znf_C2H;
Pfam; PF01352; KRAB; 12.
Pfam; PF00096; Zf-C2H2; 12.
ProDom; PD000003; Znf_C2H2; 1
  ProDom;
SMART;
                                                                                                                                                                                                                                                                                                                                                                                                            between
the Eurc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q9UJW8; Q9P1U2;
28-FEB-2003 (Rel
28-FEB-2003 (Rel
15-SEP-2003 (Rel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Submitted (MAY 2000) to the control of the control 
                                                                                                                                                                               Genew;
                                                                                                                                                                                                          EMBL; AC069278;
HSSP; P08047; 1
                                                                                                                                                                                                                                                                                                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                T180_F
                                                                                                                                                          MIM; 606740;
                                                                                                                                                                                                                                                                                                            or send
                                                                                                                                                                                                                                                                                                                                                            modified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                       entities
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Shannon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Sequence analysis gene cluster.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Shannon M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Kodoyianni V.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "Differential expansion of homologous zinc-finger human chromosome 19q13.2 and mouse chromosome 7.", Submitted (OCT-1999) to the EMBL/GenBank/DDBJ data
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Homo sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ZNF180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     y Match
Local
                                                                                                                                                                                                                                                                                                                                                                          Ween the Swiss Institute or Browner The Swiss Institute The Buropean Bioinformatics Institutions as long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SIMILARITY: Contains 1 KRAB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 finger
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     266
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NGER PROTEINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  65
  SM00349;
                                                                                                                                                                               HGNC:12970; ZNF180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        υ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          42;
                                                                                                                                                                                                                                                                                                            an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                                                                                                                                                                                       requires a
                                                                                                                                                                                                                                                                                                                                                          non-profit institu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FROM N.A.
M., Branscomb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3 (Rel. 41, Last

)3 (Rel. 41, Last

)3 (Rel. 42, Last

03 (Rel. 42, Last

03 (Rel. 42, Last
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KELKEAQEKATQANQN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NVYTDSSCKPAPA-ON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PKERGSDEGDYELWVSEDKIDKIPDCCKF---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATRAKTDPYLQIWRAFKNLED----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -YSRPSPETLKAADETKTAIK--NYVVQKEGKYD-QATDKE---
                                                                                                                                                                                                                                                                                                          equires a license agreement (S email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -KDGKDFYPQKLWDAMDKKDLLKDATQTNEIKKLADITDRSELNKVLLYYTRQKEQTLT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Brower
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ge Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                               AAF71790.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    100) to the EMBL/Ge
Y BE INVOLVED IN TH
LOCATION: Nuclear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Chordata;
Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8.7%;
21.4%;
                                                                                                  Znf_C2H2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Krummel G., Grable, Olsen A.S., Smith a 1Mb region in 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Last sequence up Last annotation 80 (HHZ168).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hauser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          26;
                                                                                                                                                                                                                                  .' .'
                          11
                                                                                                                                                                                                                                                                                                                                                       is not removed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL/GenBank/DDBJ dat
ED IN TRANSCRIPTIONAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Craniata; Vertebrata; Catarrhini; Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KRUEPPEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (Probable)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -CESTFTSG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               86;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gordon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            19q13.
                                                                                                                                                                                                                                                                                                                               (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB
4.2;
                                                                                                                                                                                                                                                                                                                                                                               There are no res
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FAMILY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      . . .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         L.,
                                                                                                                                                                                                                                                                                                                                                            Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Severin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            containing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ashworth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REGULATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 C2H2-TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            J.,
                                                                                                                                                                                                                                                                                                                                                                                                       restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            families
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -TMAYFAQQQEKTVR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gordon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DDYKNLDKIF-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            zinc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     64;
                                                                                                                                                                                                                                                                                                                                                               for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ZINC-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         finger
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ۲.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                            9
                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8
```

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DR FITTITION OF SOLUTION OF STREET ST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 INV1_PEA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
STRAIN-cv. Little Marver,

STRAIN-cv. Little Marver,

STRAIN-cv. Little Marver,

STRAIN-cv. Little Marver,

Zhang L., Cohn N.S., Mitchell J.P.;

Zhang L., Cohn N.S., Mitchell J.P.;

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"I cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A cDNA clone encoding a cell Wall invertase from pea.";

"A construction of the control of the clone encoding a cell Wall invertase from pea.";

"A control of the clone encoding a c
                                                                                                                                                                                                                                                                                                                                                                                             01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last sequence update)
15-JUL-1998 (Rel. 36, Last annotation update)
Beta-fructofuranosidase, cell wall isozyme precursor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INV1_PEA
Q43089;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CONFLICT
CONFLICT
                                                                                                                                                                                         SEQUENCE FROM N.A. STRAIN-cv. Little Marvel;
                                                                                                                                                                                                                                                                                                      Pisum sativum (Garden pea)

Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;

Spermatophyta; Magnoliophyta; eudicotyledons; core eudicots; Rosid

eurosids I; Fabales; Fabaceae; Papilionoideae; Vicieae; Pisum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ZN_FING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SMART; SM
PROSITE;
PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ZN_FING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PROSITE; PS50805; KRAB; 1.
PROSITE; PS00028; ZINC_FINGER_C2H2_1;
PROSITE; PS50157; ZINC_FINGER_C2H2_2;
                                                                                                                                                                                                                                                                          NCBI_TaxID=3888;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ZN_FING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ZN_FING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ZN_FING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ZN_FING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Nuclear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Transcription
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        349
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SM00355;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protei
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EEKP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SCKP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LNPK----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEK--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ECGKPPQSIHLIQFTRTQTKDKSYGFSDRIQSFCHGTPLHIHEKIHGGGKTFDFKECGQV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ETGEKSG---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VTAEKIGKKKLNATIL-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ANGVKIERFTRDDPWLSSCEEVDDCKDQLEKQQEKQEILLQEVAFTQRKAVIHERVCKSD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ANEAKLGSY--QDAWKS------LQQDQNKRYYLAQATQTTD--GVWGEEFTCVS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     72
353
381
409
437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     465
493
521
549
577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  regulation; DNA-binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Repeat.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LNSSLESSPVIPIRNHEHKHVSHAKKWHLNAAV-NSHQKINENETLYENN 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    431
459
487
515
571
571
571
627
683
683
272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          79040 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QGTRTQTFEDVFVFS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ISHNEQQRIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 86; DB:
Pred. No. 5.7;
27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C2H2-TYPE.
C2H2-TYPE.
C2H2-TYPE.
C2H2-TYPE.
C2H2-TYPE.
V -> A (IN
V -> W (IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C2H2-TYPE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C2H2-TYPE.
C2H2-TYPE.
C2H2-TYPE.
C2H2-TYPE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             C2H2-TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -> A (IN REF. 2).
-> W (IN REF. 2).
-> C (IN REF. 2).
301612919D30602D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -YKNKHLTDLKESHETITVWKAYDYTTENGIKYET-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB
5.7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Zinc-finger;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     <u>ب</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEESQYKCSETSHSSSLTQNMRNNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  69;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Metal-binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (EC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     692;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3.2.1.26)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                96;
                                                                                       beta-D-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TVRNVYTDS
                                                                                                                                                                                                                                                                                                                                  Rosidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DYKNCDVI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     309
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        193
```

```
RESULT 8
RB4A_ECHMU
ID RB4A_ECHMU
ID ACQUENT
IS-SEP
DT 15-SEP
DT 15-SEP
DT 15-SEP
DT SECHINO
OC EUKARY
OC CYCLOP
OX NCBL_T
RN [1]
RR SEQUEN
RC STRAIN
RX BEBLIN
CC -1-FU
CC -1-F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STITE THE TEXT OF 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    á
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACT_SITE CARBOHYD CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL; X85327; CAASSU....
PIR; T06491; T06491.
PTA+GEPTO; IPR001362; Glyco_hydro_32.
This SWISS-PROT entry is copyright. It is produced through a collab between the Swiss Institute of Bioinformatics and the EMBL outset the European Bioinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for come entitles requires a license agreement (See http://www.isb-sib.ch/an or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15-SEP-2003 (Rel. 42, Created)
15-SEP-2003 (Rel. 42, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
15-SEP-2003 (Rel. 42, Last annotation update)
Probable Ras-related protein Rab-4A.
Echinococcus multilocularis.
Eukaryota; Metazoa; Platyhelminthes; Cestoda; Eucestoda;
Cyclophyllidea; Taeniidae; Echinococcus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              the European Bloinformatics Institute. There are no restrictions use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for contentitles requires a license agreement (See http://www.isb-sib.ch/an or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RB4A_ECHMU
Q9GP33;
                                                                                                                                                                                                                                                                                                                                                                                                                             "mRNA trans-splicing in the human parasitic cestode Echinococcus multilocularis.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                   J. Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Brehm K., Jensen K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=20556267; PubMed=10973970;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN-H-95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SMART;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=6211;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Hydrolase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PROSITE;
                                                                                                                                                                                                                                                                                     TRAFFIC (BY SIMILARITY).
SIMILARITY: BELONGS TO THE SMALL GTPASE SUPERFAMILY. RAB FAMILY.
                                                                                                                                                                                                                                                                                                                         Biol. Chem. 275:38311-38318(2000).
FUNCTION: PROTEIN TRANSPORT. PROBABLY INVOLVED IN VESICULAR TRAFFIC (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PF00251; Glyco_hydro_32; 1.
f; SM00640; Glyco_32; 1.
ITE; PS00609; GLYCOSYL_HYDROL_F32; 1.
Clase; Glycosidase; Glycoprotein; Signal.
AL 22 POTENTIAL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           62 ATILYKNKHLTDLKE-----SHETITVWKAYDY-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LKVSLDDTKHDHYLIGSYDVVKDVFVPENGFEDNGFVLRYDY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSDEG-----DY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -AILYKSKNFVDWVEAKHPLHSAEGTGMWECPDFYPVLDKNLLRTGVDTSRNGDDDVRHV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PTIANKINSSSFRDPTTS-----WLGK-----DGFWR-----VLIGSKIDTKGM-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; Glycosidase;
1 22
23 555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           140
154
181
337
555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    140
154
181
337
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62655 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Frosch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BY SIMILARITY.

N-LINKED (GLCNAC. ..) (POTENTIAL)

N-LINKED (GLCNAC. ..) (POTENTIAL)

N-LINKED (GLCNAC. ..) (POTENTIAL)

7B548E251CFD5D44 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 84;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BETA-FRUCTOFURANOSIDASE, CELL WALL ISOZYME.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ŏ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      52:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 555;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -TTENG---IKYE
                                                                                                                                                                                    a collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      50;
                                        .ch/announce,
                                                                                                                                                                                 outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                       its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  its
```

```
RESULT
C4BP_BC
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SQ STITE
                                                                                                                              WEDLINE-95015909; PubMed-7930621;

WHILIATE A., Thern A., Dahlbaech B.;

WHILIATE A., Thern A., Dahlbaech B.;

White C4b binding protein. Molecular cloning of the alpha- and the chains provides structural background for lack of complex to formation with protein S.";

WILL J. Immunol. 153:4190-4199(1994).

WILL J. IMMUNOL. IT BINDS AS A COFACTOR TO C3B/C4B INACTIVATOR C. C. CASIVATION. IT BINDS AS A COFACTOR TO C3B/C4B INACTIVATOR C. C. CASINA), WHICH THEN HYDROLYZES THE COMPLEMENT FRAGMENT C4B. IT C. C. CALSO ACCELERATES THE DEGRADATION OF THE C4BC2A COMPLEX (C3 CONVERTASE) BY DISSOCIATING THE COMPLEMENT FRAGMENT C2A. ALPHA CHAIN BINDS C4B. IT INTERACTS ALSO WITH SERUM ANYLOID P COMPONENT.

C. C. CHAIN BINDS C4B. IT INTERACTS ALSO WITH SERUM ANYLOID P COMPONENT.

C. C. SUBUNIT: DISULFIDE-LINKED COMPLEX OF C4BP ALPHA AND BETA CHAINS C. C. CHAIN BINDS CAS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-NOV-1997
16-OCT-2001
C4b-binding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NP_BIND
                                     This SWISS-PROT entry is copyright. It is produced through a continuous the Swiss Institute of Bioinformatics and the EMBL the European Bioinformatics Institute. There are no restrict use by non-profit institutions as long as its content in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL;
HSSP;
                                                                                                          ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                             C4BPA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C4BP_BOVIN
Q28065;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BOVIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LIPID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SMART; SM00175; RAB; 1.
TIGRFAMS; TIGR00231; small_GTP;
                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                       Bovidae; Bovinae;
                                                                                                                                                                                                                                                                                                                                                                                                                  Eukaryota;
                                                                                                                                                                                                                                                                                                                                                                                                                               Bos taurus (Bovine).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GTP-binding; Lipoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRINTS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pfam; PF00071; ras;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                    Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LIPID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NP_BIND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro;
                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID=9913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ø
                                                                                                        SIMILARITY: TO C4BP BETA CHAIN AND TO PIG A SIMILARITY: Contains 8 Sushi (SCR) domains.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; AJ292375;
: P05713; 3R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 171 LLSKVKSGELGADRLLVGSNK 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           123 FVPKERGSDEGDYELWVSEDK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             64 ILYKNKHLTDLKESHETITVWKAYDYTTENGIKY-ETQGTRTQTFEDVFVFSDYKNCDVI 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PR00449;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ILVGNK -- KDLRDTDGQVTHWEANTFAQENGLQFIETSALTGENIDDAFT----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IPR005225; Small_GTP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IPR001806;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IPR003579; GTPase_Rab
                                                                                                                                                                                                                                                                                                                                                                                                                  Metazoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 223
                                                                                                                                                                                                                                                                                                                                                                                                                                                       (Rel. 35, Created)
(Rel. 35, Last sequence update)
(Rel. 40, Last annotation update)
protein alpha chain precursor (C4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              16
64
122
38
221
223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3RAB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAC18549.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RASTRNSFRMNG.
                                                                                                                                                                                                                                                                                                                                                                                       Bos.
                                                                                                                                                                                                                                                                                                                                                                                                  Chordata; Craniata; Vertebrata; Euteleostomi; Cetartiodactyla; Ruminantia; Pecora; Bovoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               24454 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ras_trnsfrmng.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Prenylation; Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 81;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GTP (BY SIMILARITY).
GTP (BY SIMILARITY).
GTP (BY SIMILARITY).
EFFECTOR REGION (BY SIMILARITY).
GERANYL-GERANYL (BY SIMILARITY).
GERANYL-GERANYL (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9EE6D6166E2089A4 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                         (C4bp).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1;
                                                                                                                       APOLIPOPROTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              transport.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                    a collaboration –
MBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                        æ
                                                                  outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -SCVRV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      170
```

the European Bioinformatics Institute. There are no restrict use by non-profit institutions as long as its content is modified and this statement is not removed. Usage by and fcentities requires a license agreement (See http://www.isb-sib.

restrictions

for

commercial

ņ g

its

.ch/announce,

```
RESULT
OPPF_MY
   닭
                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                       뫄
                                                                                                                                                                                                                                                                                                                                                                                                   Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                      OPPF_MYCPN STANDARD; PRT; 851 AA. P75551; O1-NOV-1997 (Rel. 35, Created) O1-NOV-1997 (Rel. 35, Last sequence update) 16-OCT-2001 (Rel. 40, Last annotation update) Oligopeptide transport ATP-binding protein opper OR MPN218 OR MP613.
                                                                                                                                                                                MYCPN
Bacteria; Firmicutes;
NCBI_TaxID=2104;
[1]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CARBOHYD
CARBOHYD
CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DISULFID DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DOMAIN
DISULFID
                                                Mycoplasma pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; Z31693; CAA83498.1;
PIR; I46001; I46001.
HSSP; P10998; IVVD.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pfam; PF00084; sushi; i
SMART; SM00032; CCP; 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         InterPro; IPR000436; Sushi_SCR_CCP
                                                                                                                                                                                                                                               434
                                                                                                                                                                                                                                                                             157
                                                                                                                                                                                                                                                                                                                                           132
                                                                                                                                                                                                                                                                                                                                                                          315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ement pathway; Pl.
                                                                                                                                                                                                                                                                                                                                                                                                      78
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                            VIAHGQHKVVSKFFT 448
                                                                                                                                                                                                                                                                                                                                                                     HOTOTEQQVYDIGFVLSYKCHFGYKPETDGPTTVTCQSNLEWSPYIECKEVCCPEPNLNN
                                                                                                                                                                                                                                                                          YFAQQQEKTVRNVYT
                                                                                                                                                                                                                                                                                                                                         EGDYEL-----WVSEDKID----
                                                                                                                                                                                                                                                                                                                                                                                                   HETITVWKAYD-----YTTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSD
                                                                                                                                                                                                                                                                                                        YGSITLHRRPSTSTHCTYISGDKISYECHSKYMFDALCTKHGTWSPRTPECRPDCK-SPP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7366
7367
7402
429
457
487
514
561
561
5221
500
                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           295
426
426
4426
542
542
107
1153
1153
217
2314
2317
2317
2317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    68886
                                                                                                                                                                                                                                                                                                                                                                                                                                                     8.2%;
23.7%;
                            Mollicutes; Mycoplasmataceae; Mycoplasma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              asma;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    M.
                                                                                                                                                                                                                                                                                                                                                                                                                                    14; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BY SIMILARITY.

BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Glycoprotein; Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 81;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IHSOS
IHSOS
IHSOS
IHSOS
IHSOS
IHSOS
IHSOS
IHSOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C4B-BINDING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PROTEIN ALPHA CHAIN
                                                                            oppF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1;
                                                                                                                                                                                                                                                                                                                                                                                                                                   47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BETA CHAIN) (POTENTIAL).
BETA CHAIN) (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 610;
                                                                                                                                                                                                                                                                                                                                       -----KIPDC---CKFTMA
                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sushi; Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (POTENTIAL).
(POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                   42;
                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                      156
                                                                                                                                                                                                                                                                                                                                                                       374
                                                                                                                                                                                                                                                                                                                                                                                                   131
                                                                                                                                                                                                                                                                                                                                                                                                                                   ū
```

```
RESULT 11
ATRX_HUMAN
                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                            Ωy
                                                                                                                                                                                                                                                                                                                                                                                                         Вþ
                                                                                                                                                                                                                                                                                                                                                     B
                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
Matches 44; Conserv
                       Homo sapiens (Human).
Eukaryota; Metazoa; Cl
Mammalia; Eutheria; P:
NCBI_TaxID=9606;
                                                                        ATEX_HUMAN STANDARD; PRT; 2492 AA. P46100; P51068; Q15886; Q9H0Z1; Q9NTS3; Q1-NOV-1995 (Rel. 32, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
15-SEP-2003 (Rel. 42, Last annotation update)
Transcriptional regulator ATRX (X-1inked helicase nuclear protein) (XNP) (Znf-HX).
ATRX OR RAD54L OR XH2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SMART; SM00382; AAA; 1.
PROSITE; PS00211; ABC_TRANSPORTER_1; 1.
PROSITE; PS50893; ABC_TRANSPORTER_2; 1.
Peptide transport; Transport; Membrane; ATP-binding;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       pneumoniae.";
Nucleic Acids Res. 24:4420-4449(1996).
Nucleic Acids Res. Date BINDING-PROTEIN-DEPENDENT TRANSPORT SYSTEM
-!- FUNCTION: PART OF THE BINDING-PROTEIN-DEPENDENT TRANSPORT SYSTEM
FOR OLIGOPEPTIDES. PROBABLY RESPONSIBLE FOR ENERGY COUPLING TO THE
TRANSPORT SYSTEM (BY SIMILARITY).
-!- SUBCELLULAR LOCATION: Membrane-associated (Potential).
-!- SIMILARITY: Belongs to the ABC transporter family.
  SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Complete proteome.
NP_BIND 48
SEQUENCE 851 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pfam; PF00005; ABC_tran; 1.
ProDom; PD000006; ABC_transporter;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               the European Bioinformatics Institute. The summer of the statement is not removed modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A. STRAIN=ATCC 29342 / MEDLINE=97105885; Pu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    InterPro; IPR003593; AAA_ATPase.
InterPro; IPR003439; ABC_transporter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL; AE000058; AAB96261.1; -. PIR; S73939; S73939.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        between the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "Complete sequence analysis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Himmelreich R., Hilbert H., Plagens H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Herrmann R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                        171
                                                                                                                                                                                                                                                                                                   327
                                                                                                                                                                                                                                                                                                                            115
                                                                                                                                                                                                                                               387
                                                                                                                                                                                                                                                                                                                                                        293
                                                                                                                                                                                                                                                                                                                                                                                                           251
                                                                                                                                                                                                                                                                                                                                                                                60
                                                                                                                                                                                                                                                                                                                                                                                                                                    w
 FROM
                                                                                                                                                                                                                                                                                                                                                                                                     --LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFS---
                                                                                                                                                                                                                                               SDAKAE 392
                                                                                                                                                                                                                                                                                                   MVDKKRRLVLVLSEYYKALPYFYDNWIHQNADRFDELTNAVFFDLIDVVIALNRDFANVE
                                                                                                                                                                                                                                                                                                                           --DYKNCDVIFVPKERGSDEGDYELWVSE--DKIDKIPDCCKFTMAYFAQQQEKTVRNVY
                                                                                                                                                                                                                                                                        TDSSCK 176
                                                                                                                                                                                                                                                                                                                                                        IYLNAWLL---
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
 N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              / M129;
PubMed=8948633;
  (ISOFORMS
                                       Chordata;
Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                55 A
98611 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            26;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 81;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  is not removed.
 ۲.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATP (POTENTIAL).
; 6D3A3EC76B27DCC2 CRC64;
                                       Craniata; Vo
Catarrhini;
 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
  ω
••
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       genome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        20;
  AND
                                                      Vertebrata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             There are no restrictions ng as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pirkl E.,
                                                                                                                                                                                                                                                                                                                                                     -TTKNYIKDSRQ--NTQLTDDVFAFSYND
                                        Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1
5),
                                                                                                                                                                                                                                                                                                                                                                                                                                                            60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 851;
  VARIANT SER-1860,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         bacterium
                                                                                                          II)
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ŀ
                                                      Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  γď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ш
                                                                                                          (X-linked
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  and
                                                                                                                                                                                                                                                                                                                                                                                                                                                            56;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mycoplasma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  for
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                   386
                                                                                                                                                                                                                                                                                                                                                                               114
                                                                                                                                                                                                                                                                                                                                                                                                         292
                                                                                                                                                                                                                                                                                                                                                                                                                                   59
```

```
MEDLINE-20040663; PubMed-10570185;
MCDOWell T.L., Gibbons R.J., Sutherland H., O'Rourke D.M.,
Bickmore W.A., Pombo A., Turley H., Gatter K., Picketts D.J.
Buckle V.J., Chapman L., Rhodes D., Higgs D.R.;
"Localization of a putative transcriptional regulator (ATRX)
pericentromeric heterochromatin and the short arms of acroce chromosomes.";
                                                                                                                                                                                                                                                                                                                                                                                              [6]
MEDLINE-97196774;
Villard L., Lacomb
                                           Villard L., Fontes M., Ades L.C., Geo "Identification of a mutation in the reported as Smith-Fineman-Myers syndram, J. Med. Genet. 91:83-85(2000).
                                                                                                                                                                                                                                                                                                                                                                                                       Gibbons R.J., Picketts D.J., Villard L., Higgs D.R.; Mutations in a putative global transcriptional regulator cause linked mental retardation with alpha-thalassemia (ATR-X syndrome Cell 80:837-845(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Stayton C.L., Dabovic Giovanazzi S., Bossola
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE OF 860-24
MEDLINE-95179111;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE-97386582; PubMed-9244431; Villard L., Lossi A.-M., Cardoso C., Pro Colleaux L., Schwartz C., Fontes M.; "Determination of the genomic structure a potential zinc finger helicase."; Genomics 43:149-155(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "ATRX encodes
point to a con
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VARIANTS ATR-X.
WEDLINE-97123494; PubMed-8968741;
Picketts D.J., Higgs D.R., Bachoo Gibbons R.J.;
                                                                                                                                                                                                                                                                                                            Cardoso C., Timsit
                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE OF 2401-2492 FROM N.A., MEDLINE-95211835; PubMed-7697714
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE-94214473;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                                                                                          MEDLINE=20213147; PubMed=10751095;
                                                                                                                                                                                                                                       SUBCELLULAR LOCATION,
                                                                                                                                                                                                                                                                                               Colleaux L.;
                                                                                                                                                                                                                                                                                                                    MEDLINE-98167853;
                                                                                                                                                                                                                                                                                                                                                          Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRELIMINARY PARTIAL SEQUENCE FROM MEDLINE-94214473; PubMed-8162050;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bianchi M.E.,
                       ARIANT ATR-X SER-1713
                                                                                                                                                                                                                                                    œ
                                                                                                                                                                                                                                                                                     Specific
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        J., .Pollard
                                                                                                                              Natl.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OF 860-2492 FROM N.A.
95179111; PubMed=7874112;
C.L., Dabovic B., Gulisano M.
zi S., Bossolasco M., Monaco
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        and expression of the murine homologue nuclear protein gene closely linked to . Genet. 3:39-44(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  and characterization
helicase.";
                                                                                                                                                                                                                                                                                                                                                                                 OF 1375-2492 FROM
                                                                                                                                                                                                                                                            interaction between the XNP/ATR-X the human EZH2 protein."; Genet. 7:679-684(1998).
                                                                                                                                                                                                                                                                                                                                                         (DEC-2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Genet.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           common mechanism underlying Genet. 5:1899-1907(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ollard H., Consalez G., Villard L., P., Khrestchatisky M., Fontes M.;
                                                                                                                              Acad.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a novel member of the SNF2 family of proteins: mmon mechanism underlying the ATR-X syndrome.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Consalez G.G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     3:1957-1964(1994).
                                                                                                                              Sci.
                                                                                                                                                                                                                                                                                                         PubMed=9499421;
t S., Villard L.,
           PubMed=9043863;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (ISOFORMS
.
.
                                                                                                                                                                                                                                                                                                                                                         ៩
                                                                                                                                                                                                                                       AND ASSOCIATION WITH
                                                                                                                              U.S.A.
                                                                                                                                                                                                                                                                                                                                                         the EMBL/GenBank/DDBJ
                                                                                                                             96:13983-13988(1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AND
                                                         syndrome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AND
                                                                              Gecz
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0 K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          s.
                                                                                                                                                                                                                                                                                                          Khrestchatisky M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              new
                                                                   CZ J.;
XNP/ATR-X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VARIANTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Proud
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gecz J.,
.., Rastan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Blake
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .
.
.
                                                                                                                                                                                                                                    PERICENTROMERIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         D.J.,
                                                                                                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              xq13
                                                                                                                                                                                                                                                                                                                                                         databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATR-X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Stayton
                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    of a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    XNP/ATRX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chiaroni
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Broccoli V.,
S., Boncinelli E.,
                                                                                                                                                                                                                                                                                  product
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Quarrell 0
                                                                    'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    putative human
in Xq13.3.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                (ATRX) at
                                                                                                                                                                                                                                                                                                           Fontes
                                                                                                                                                      acrocentric
                                                                    o)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                  syndrome).";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             encoding
                                                                                                                                                                                                                                                                                    and
                                                                                                                                                                                                                                                                                    the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     encoding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   mutations
                                                                                                                                                                                                                                                                                                                                                                                                                              ×
                                                                                                                                                                                                                                                                                    SET
```

```
LEU-246 AND CYS-249.

MEDLINE-99219535; PubMed-10204841;

Villard L., Bonino M.-C., Abidi F., Ragusa A., Belougne J.,

Lossi A.-M., Seaver L., Bonnefont J.-P., Romano C., Fichera I
Lacombe D., Hanauer A., Philip N., Schwartz C.E., Fontes M.;

Lacombe D., Hanauer A., Philip N., Schwartz C.E., Fontes M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gibbons R.J., Bachoo S., Picketts D.J., Pergoffen J., Berry S.A., Dahl N., Fryer Levin M.L., Masuno M., Neri G., Pierpont Higgs D.R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VARIANT SHS LYS-1742.

MEDLINE-99347960; PubMed=10417298;
LOSSI A.-M., MILLAN JM., VILLARD L., Orellana C., Cardo Prieto F., Fontes M., Martinez F.;

"Mutation of the XNP/ATR-X gene in a family with severe retardation, spastic paraplegia and skewed pattern of X demonstration that the mutation is involved in the inact
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=20123062; PubMed=10660327; Failla Fichera M., Romano C., Castiglia L., Failla Greco D., Cardoso C., Fontes M., Ragusa A.; "New mutations in XNP/ATR-X gene: a further genotype/phenotype relationship in ATR/X syn Hum: Mutat. 12:214-214(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                  VARIANT CWS THR-2050.
MEDLINE-99326061; PubMed-10398237;
Abidi F., Schwartz C.E., Carpenter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Villard L., Gecz J.,
Munnich A., Lyonnet :
÷
                                                                                                                              Wada T., Kubota T., Fukushima Y., Saitoh, S.;
"Molecular genetic study of Japanese patients with
thalassenia/mental retardation syndrome (ATR-X).";
Am. J. Med. Genet. 94:242-248(2000).
                                                                                                                                                                                      MEDLINE-20451413; PubMed-10995512;
                                                                                                                                                                                                   VARIANTS ATR-X
AND CYS-1847.
                                                                                                                                                                                                                                                      "Evaluation of a mutation ATR-X syndrome.";
                                                                                                                                                                                                                                                                                                                                                 VARIANTS ATR-X GLU-175;
                                                                                                                                                                                                                                                                                                                                                                                                        Curtis M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        bias.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  significance
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "XNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE-96224392;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "A point mutation in the without alpha-thalassemia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VARIANT ATR-X LEU-246
                                                                                                                                                                                                                                                                                                                                                                            "Carpenter-Waziri syndrome results um. J. Med. Genet. 85:249-251(1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Mutations
                                                            FUNCTION: COULD BE A GLOBAL TRANSCRIPTIONAL REGUI
GENE EXPRESSION BY AFFECTING CHROWATIN. MAY BE II
DEVELOPMENT AND FACIAL MORPHOGENESIS.
SUBUNIT: PROBABLY BINDS EZHZ. BINDS ANNEXIN V IN
PHOSPHATIDYLCHOLINE/PHOSPHATIDYLSERINE-DEPENDENT
                       similarity).
SUBCELLULAR LOCATION: I
HETEROCHROMATIN DURING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         J. Hum. Genet.
INTERACTING
ALTERNATIVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ations in transcriptional regulator ATRX establish the ificance of a PHD-like domain."; Genet. 17:146-148(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    mutation
                                                                                                                                                                                                                                         Genet. 36:183-186(1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Lyonnet on in a l
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        on in a large fami
12:359-360(1996).
                                                                                                                                                                                                                SER-179;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PubMed-8630485;
J., Mattei J.-F.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               in the XNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         65:558-562(1999).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ß
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4:316-320(1996)
                                                                                                                                                                                                                LEU-190;
                                                                                                                                                                                                                                                                                                                                                 178-VAL--LYS-198
                                                                                                                                                                                                                                                                                                                                                                                                                   Carpenter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    family with Juberg-Marsidi syndrome.";
                                       NUCLEAR.
                      NUCLEAR. ASSOCIATED INTERPHASE AND MITC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene, associated
                                                                                                                                                                                                              ILE-194;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     D.J., Aftimos S., Asenbauer B., Fryer A., Keppler K., Kurosawa terpont M.E., Slaney S.F.,
                                                                                                                                                                                                                                                                                                                                                                                        from
                                                                                                                                                                                                                                                                                                                                                                                                                  z.j.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Fontes M.,
                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                 DEL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        syndrome
                                                                                                                                                                                                                                                                                                                                                                                                                  Villard L.,
                       ATED WITH MITOSIS,
                                                                                                                                                                                                              CYS-246;
                                                                                                                                                                                                                                                                                                                                                                                          mutation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      contribution
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .
.
                                                                                                                                                                                                                                                                                                                                                 SER-190;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Saugier-Veber
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               with
                                                                                                      REGULATOR.
BE INVOLVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ruberto
                                                                                                                                                          x-linked
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  inactivation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               an
                         PERICENTROMERIC PROBABLY BY
                                                                                                      INVOLVED
                                                                                                                                                                                                                                                                                                                                                                                        'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Cardoso
                                                                                                                                                                                                              PHE-1552;
                                                               A CALCIUM
MANNER (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATR-X phenotype
                                                                                                                                                                                                                                                                                                                                                  PRO-219;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C:,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           mental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               inactivation:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ç
                                                                                                                                                                                                                                                                    cases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ?
                                                                                                                    MODIFIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              functional
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ۳.
                                                                                                                                                                                                                                                                                            X
                                                                                                                                                                                                                                                                                                                                                                                                                   .
                                                                                                      Z
                                                                                                                                                            alpha-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Amata
                                                                           AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               s.,
```

```
RESULT
CFAH_MC
                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÕ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query
Best 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                   CFAH_MOUSE P06909;
                                                                       Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                             01-JAN-1988 (Rel. 06, Created)
01-JAN-1988 (Rel. 06, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Complement factor H precursor (Protein beta-1-H).
                                                                                                                                                                                                                                                                                                                    MOUSE
    SEQUENCE FROM N.A
                                                                                                                      Mus musculus (Mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     <del>-</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DISEASE: Defects in ATRX are the cause of Carpenter-Waziri syndrome (CWS), an X-linked recessive condition characterized by moderate mental retardation, short stature, brachydactyly with excessive skin creases, and widening of the knuckles.

DISEASE: Defects in ATRX are the cause of Juberg-Marsidi syndrome (JW) [MIM:309590]. JM is a rare X-linked recessive disease characterized by severe mental retardation, growth failure, sensorineural deafness, microgenitalism and early death.

SIMILARITY: BELONGS TO THE SNF2/RAD54 HELICASE FAMILY.

SIMILARITY: Contains 1 PHD-type zinc finger.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TISSUE SPECIFICITY: Ubiquitous.

DISEASE: Defects in ATRX are the cause of X-linked alphathalassemia/mental retardation syndrome (ATR-X) [MIM:301040]. ATR-X is an X-linked disorder comprising severe psychomotor x is an X-linked disorder comprising severe psychomotor retardation, facial dysmorphism, urogenital abnormalities, and
                                                                                                                                               OR CFH.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   erythrocyte inclusions.

DISEASE: Defects in ATRX are the cause of Sutherland-Haan mental retardation syndrome (SHS) [MIM:309470]. It is characterized by severe mental retardation with spatic characterized by severe mental retardation with spatic characterized by severe mental retardation with spatic characterized by severe mental retardation and remove the severe characterized by severe mental retardation and remove the severe characterized by severe mental retardation with spatic characterized by severe characterized by severe characterized by severe ch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  paraplegia, microcephaly, short stature and cryptorchidism. DISEASE: Defects in ATRX are a cause of Smith-Fineman-Myers syndrome (SFM) [MIM:309580]. Clinical features include seve
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       mental retardation, microcephaly, growth failure, facial anomalies and bilateral cryptorchidism. Due to the clinical overlap with ATR-X syndrome, some patients originally diagnosed as having SFM, might be affected by a variant of ATR-X syndrome which lack
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          alpha-thalassemia. An essential phenotypic trait are
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Name-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Event=Alternative Name=4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   hemoglobin h inclusions.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        913
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IsoId=P46100-4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IsoId=P46100-2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IsoId=P46100-1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IsoId=P46100-5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QATQTTDGV----WGEEFTCVSVTAEKIGKKKLNATILYKNKHLTDLKESHETITVWKAYD
                                                                                                                                                                                                                                                                                                                                                                                                               SDGTEKLPEREEICHFPKGI----
                                                                                                                                                                                                                                                                                                                                                                                                                                                            EDKIDKIP---DCCKFTMAYFAQQQEKTVRNVYTDSSCK 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GLSDIAEKFLKKDQSDETSED-----DKKQSKKGTEEKKKPSDFKKKVIKMEQQYE--SS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       YTTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSD-----EGDYELWVS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QASASTDGVDKLSGKEQSFTSLEVRKVAETK----EKSKHL----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                           STANDARD;
                                                                          Rodentia;
                                                                                           Chordata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8.28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence=VSP_000574, VSP_000576;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        splicing; Named isoforms=5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence=VSP_000576;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence=VSP_000574;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence=VSP_000575
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 81; DB
Pred. No. 71;
                                                                     Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                           PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                               -- KQIKNGTTDGEKK 1045
                                                                                                                                                                                                                                                                                           1234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1; Length 2492;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            56;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        hemoglobin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -KTKTCKKVQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 40;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     severe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           x-linked
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      959
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
THE THE TENT TO TH
                                                                                                                                       DOMAIN
DOMAIN
DOMAIN
DOMAIN
DOMAIN
DISULFID
                                                                                           DOMAIN
DOMAIN
                                                                                                                                                                                                                                                              DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                           DOMAIN
DOMAIN
                                            DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Signal.
                                                                                                                                                                                                                                                                                                             DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                          DOMAIN
                                                                                                                                                                                                                                                                                                                                     DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                      DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                         DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       or send
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SMART;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MGD; MGI:88385;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               entities requires a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro; IPR000436;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PIR; A26154; NBMSH.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   the complete cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRAIN=BALB/c;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE OF 1-19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    convertase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PF00084; sushi; sM00032; CCP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            P08603; 1HFI.
                                                                                                                                                                                                                                                                                                                                                           20
84
145
209
266
324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Cfh.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FROM
                                                                                                                                                                                                                                                                                                                                     18
1234
81
142
206
263
321
386
443
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sequence
                                                                                                                                          506
565
623
684
744
803
862
932
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             N.A.
```

```
PUDENCE OF 1-18 FROM N.A.
SEQUENCE OF 1-18 FROM N.A.
MEDLINB-90111033; PubMed-2136885;
Natsuume-Sakai S., Nonaka M., Nor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL; M12660; AAA37759.1; -. EMBL; J02891; AAA37795.1; -. EMBL; M31979; AAA37762.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=90148935; PubMed=2533512;
Munoz-Canoves P., Tack B.F., Vik D.P.;
"Analysis of complement factor H mRNA expression: dexamethasone
IFN-gamma increase the level of H in L cells.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Complement alternate pathway; Plasma; Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         use by non-profit institu modified and this statement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           between the Swiss Institute of Bioinformathe European Bioinformatics Institute. The European Profit institutions as long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Proc. Natl. Acad. Sci. U.S.A. 83:3963-3967(1986)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=86233353; PubMed=2940596; Kristensen T., Tack B.F.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -!- SIMILARITY: Contains 20 Sushi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Murine protein H is comprised of
in length.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Demonstration of an unusual allelic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SUBCELLULAR LOCATION: Secreted.
TISSUE SPECIFICITY: Synthesized by liver and secreted in POLYMORPHISM: TWO CODOMINANT ALLELES OF FACTOR H ARE PRESENTED TO THE PRESENT OF T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               C3b by factor I and also increases the C3bBb complex (C3 convertase) and the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FUNCTION: Factor H functions as a cofactor in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              s requires a license agreement (; an email to license@isb-sib.ch)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               144:358-362(1990)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      28:9891-9897(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             in the alternative complement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sushi_SCR_CCP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         is not removed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SUSHI 1.
SUSHI 2.
SUSHI 3.
SUSHI 4.
118.08
118.08
118.08
118.08
118.08
118.08
118.08
118.08
118.08
118.08
118.08
118.08
                                                                                                                                                                                                                                                                                                                                                       SUSHI
                                                                                                                                                                                                                                                                                                                                                                                                                      SUSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SUSHI
                                                                                                                                                                                                                                                                                                                                                                                                                                                       IHSUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BY SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPLEMENT FACTOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Nonaka
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             H. 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (SCR) domains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     20 repeating units,
                                                                                                                           14
15
16
                                                                                                                                                                                                                                                                                    9.
10
11
12
                                                                                                                                                                                                                                                             13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       .
X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        variation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          allotype
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the rate of he (C3b)NBB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            There
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Harada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 pathway
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 of mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Y.N.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the inactivation f dissociation of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               dissociation complex (C5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Уď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (Ву
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Shreffler
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           factor H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   in plasma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            amino
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sushi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             in no way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ьy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             or
the
```

```
RESULT
PCN3_SU
ID PCN3_SU
OS
AC OS
DT 28
D
                                                                                                                                                                                                                                                                                                           B 8
                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DISULFID
                    PCNC OR STO
Sulfolobus
                                    PCN3_SULTO STANDARD; PRT; 246 AA. 0973F5; 28-FEB-2003 (Rel. 41, Created) 28-FEB-2003 (Rel. 41, Last sequence update) 28-FEB-2003 (Rel. 41, Last annotation update) DNA polymerase sliding clamp C (Proliferating homolog C) (PCNA C).
                                                                                                                                                                                             SULTO
PCN3_S
                                                                                                                                                                                                                                                                                                                                                                                               1142
                                                                                                                                                                                                                                                                                                                                               81
                                                                                                                                                                                                                                                                                                                                                                                                                                      24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                         ITVW----KAYDYTTEN---GIKY 97
                                                                                                                                                                                                                                                                                                                                                                                                                      QNKRYYLAQATQT----TDGVWGEEFTCVSVTAEKIGKKKLNATILYKNKHLTDLKESHET
Crenarchaeota;
                                                                                                                                                                                                                                                                                                                                                                                               QCQKYYLLKGKKTITCTNGKWSEPPTC--
                      tokoda11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        139082
Thermoprote1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BY SIMILARITY
BY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 80.5; D
Pred. No. 34;
13; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LINKED (GLCNAC...
C5ACO2F341B957F7 (
Sulfolobales;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB
                                                                                                                                                                                                                                                                                                                                                                                               -----LHACVIPEN----IMESHNI 1184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  19;
                                                                                    cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1234;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CRC64;
                                                                                    nuclear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (POTENTIAL).
(POTENTIAL).
(POTENTIAL).
(POTENTIAL).
(POTENTIAL).
(POTENTIAL).
(POTENTIAL).
Sulfolobaceae,
                                                                                    antigen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                        80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  G
                                                                                                                                                                                                                                                                                                      RESULT 14
PEP1_YEAST
RNX OCC
                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          - I -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN-JCM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                           185 LLESEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               125
                                                                                                                                                                                                                                                                                                                                                                                                                                      96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             l Similarity
33; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                        KYETQG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                             190
                                                                                                                                                                                                                                                                                                                                                                                                                                        101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7;
```

```
EMBL; AP000984; BAB65958.1; ...

HAMAP; MF_00317; -; 1.

InterPro; IPR000730; Pr_cel_nuc_antig.

Pfam; PF00705; PCNA; 1.

PRINTS; PR00339; PCNACYCLIN.

PRODOM; PD002673; PCNA_1: PALSE_NEG.

PROSITE; PS01251; PCNA_1: FALSE_NEG.

PROSITE; PS01251; PCNA_1: FALSE_NEG.

PROSITE; PS01251; PCNA_1: FALSE_NEG.

DNA-binding; DNA replication; Complete proteome.

SEQUENCE 246 AA; 27436 MW; BA370A5D227B4E7F CRO
Saccharomyces cerevisiae (Baker's yeas Eukaryota; Fungi; Ascomycota; Saccharonycetales; Saccharomycetaceae; NCBI_TaxID-4932;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Kawarabayasi Y., Hino Y., Horikawa H., Jin-no K., Takahashi M., Sekine M., Baba S.-I., Ankai A., Kosugi H., Hosoyama A., Fukui S., Nagai Y., Nishijima K., Otsuka R., Nakazawa H., Takamiya M., Kato Yoshizawa T., Tanaka T., Kudoh Y., Yamazaki J., Kushida N., Oguchi Aoki K.-I., Masuda S., Yanagii M., Nishimura M., Yamagishi A., Oshima T., Kikuchi H.; Nangii M., Nishimura M., Yamagishi A., Complete genome sequence of an aerobic thermoacidophilic Crenarchaeon, Sulfolobus tokodaii strain7.*;
                                                                               PEP1_YEAST STANDARD; PRT; 1579 AA.
p32319;
01-OCT-1993 (Rel. 27, Created)
01-OCT-1993 (Rel. 27, Last sequence update)
15-JUL-1999 (Rel. 38, Last annotation update)
vacuolar protein sorting/targeting protein PEP1 precursor carboxypeptidase sorting receptor VPS10) (Carboxypeptidase preceptor) (CPY receptor).
pEP1 OR VPS10 OR YBL017C OR YBL03.22.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE-21456156; PubMed-11572479;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NCBI_TaxID=111955;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Res. 8:123-140(2001).

FUNCTION: Sliding clamp subunit. Responded to the subunit of DNA polymerase to replication (By similarity).

SUBUNIT: Homotrimer (By similarity).

SIMILARITY: BELONGS TO THE PCNA FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NLEFPFKAKALTVTFTDIIDEIEDIGGDSITFKAEGGKLYLSANSDMGSSTIELSTENGG
                                                                                                                                                                                                                                                                                                                                                                                                                                         8.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; Score ;
; Pred. !
17; Mis
     BLUJOC.
Ker's yeast).
Saccharomycotina; Saccharomycos.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NO ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Responsible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     le for tethering the during high-speed
                                              Saccharomycetes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                             (Vacuolar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Oguchi A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                           95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ç
```

```
EMBL; X68577; CAA48568.1; -.
EMBL; Z35778; CAA84836.1; -.
EMBL; U07621; AAA18831.1; -.
PIR; S25329; S25329;
SGD; S0000113; PEP1.
GO; GO:0006623; P:protein-vacuolar targeting; IM
GO; GO:0007034; P:vacuolar transport; IMP.
InterPro; IPR002860; GH_BNR.
InterPro; IPR002861; VPS10.
   CARBOHYD
CONFLICT
                                                                                                                                                                                                        CARBOHYD
CARBOHYD
CARBOHYD
CARBOHYD
                                                                                                                                                                                                                                                                               TRANSMEM
DOMAIN
NP_BIND
CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "An 11.4 kb DNA segment on the left arm of y carries the carboxypeptidase Y sorting gene Yeast 8:769-776(1992)."
                                                                                                                                                                                                                                                                                                                                                                                         CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      the
                                                                                                                                                                                                                                                                                                                                                                                                                      SMART; SM00602; VPS10; 2. Transmembrane; Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                            Pfam; PF02012; BNR; 13.
SMART; SM00602; VPS10; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         This
                                                                                                                                                                                                                                                                                                                                                   DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                            SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   entities
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       modified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        use
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              encoded by the VPS10 cell 77:579-586(1994)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Marcusson E.G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A. MEDLINE-94243924;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM
STRAIN-S288c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  send
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FUNCTION: INVOLVED IN THE INTRACELLULAR SORTING AND DELIVERY OF SOLUBLE VACUOLAR PROTEINS, SEEMS TO SPECIFICALLY INTERACT WITH CARBOXYPEPTIDASE Y (CPY). MAY EXECUTE MULTIPLE ROUNDS OF SORTING BY CYCLING BETWEEN THE LATE GOLGI AND A PREVACUOLAR ENDOSOME-LIKE COMPARYMENT. BINDS THE GOLGI-MODIFIED P2 FORM OF CPY, AND THIS INTERACTION IS DEPENDENT ON THE PRESENCE OF AN INTACT CPY VACUOLAR PROTEIN SORTING SIGNAL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPARTMENT.

COMPARTMENT.

DOMAIN: THE LUMENAL DOMAIN CONTAINS TWO REGIONS OF 650 AA THAT EXHIBIT 20% IDENTITY. THE CYTOPLASMIC DAS A GOLGI RETENTION/RECYCLING SIGNAL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      European
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SIMILARITY: BELONGS TO THE PEP1 FAMILY OF MEMBRANE GLYCOPROTEINS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SUBCELLULAR LOCATION: TYPE I MEMBRANE PROTEIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SWISS-PROT entry is copyright. It is produced through een the Swiss Institute of Bioinformatics and the Eleuropean Bioinformatics Institute. There are no resti
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sorting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 non-profit institutions as long and this statement is not removed requires a license agreement (See
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FROM
     1398
1415
180
180
96
177
447
793
1010
1303
1010
1303
151
194
119
152
165
202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    receptor for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Horazdovsky
                                                                                                                                                                                                                                                                                                                                                                                         1579
       PubMed-8187177;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   yeast vacuolar carboxypeptidase
.";
N-LINKED (GLCNAC. .) (PO)
N-LINKED (GLCNAC. .) (PO)
N-LINKED (GLCNAC. .) (PO)
N-LINKED (GLCNAC. .) (PO)
T-> I (IN REF. 2)
D-> E (IN REF. 2)
T-> A (IN REF. 2)
G-> D (IN REF. 2)
AMNGSY -> SMYESR (IN REF. 2)
GESISPRE -> EKNISSRG (IN REF. 2)
QFE -> APV (IN REF. 2)
P-> A (IN REF. 2)
QFE -> APV (IN REF. 2)
P-> A (IN REF. 2)
P-> A (IN REF. 2)
                                                                                                                                                                                                                                                         PROTEIN PEP1
LUMENAL (POTENTIAL).
POTENTIAL.
POTENTIAL.
CYTOPLASMIC (POTENTIAL).
ATP (POTENTIAL).
N-LINKED (GLCNAC. . .) (PON-LINKED (GLCNAC. . . ) (PON-LINKED (GLCNAC. . ) (PO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    B.F.,
                                                                                                                                                                                                                                                                                                                                                                                    Receptor; Signal; POTENTIAL.
VACUOLAR PROTEIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Cereghino J.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Goffeau A.;
t arm of yeast c
ting gene PEP1,
                                                                                                                                                                                                                     GLCNAC...
GLCNAC...
(GLCNAC...
(GLCNAC...
                                                                                                                                                                                                                                                                                                                                                                                                                       Signal; ATP-binding; Repeat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Usage
                                                                                                                                                                                                                                                                                                                                                                                       SORTING/TARGETING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gharakhanian
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              as
                                                                                                                                                                                                    (POTENTIAL).
(POTENTIAL).
(POTENTIAL).
(POTENTIAL).
(POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ьу
                                                                                                                                                                                       (POTENTIAL)
                                                                           . 2).
REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            F APPROXIMATELY
DOMAIN MAY SERVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ĸ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              as ACH1
                                                                           2)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     no
```

```
AID DICTOR REPORT OF THE PROPERTY OF THE PROPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               POLG_E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 멂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COSTRACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local S
Matches 35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           POLG_ECOIF STANDARD; PRT; 2184 AA.

991734; Q66795; O9YID6;
15-JUL-199 (Rel. 38, Created)
28-FEB-2003 (Rel. 41, Last sequence update)
28-FEB-2003 (Rel. 41, Last sequence update)
28-FEB-2003 (Rel. 41, Last annotation update)
Genome polyprotein [Contains: Coat protein VP4 (PlA); Coat prot

[P1B); Coat protein VP3 (PIC); Coat protein VP1 (PlD); Picornai

[EC 3.4.22.29) (P2A); Core protein P2B; Core protein P2C; Core

P3A; Genome-linked protein VPG (P3B); Picornain 3C (EC 3.4.22.2

[Protease 3C) (P3C); RNA-directed RNA polymerase (EC 2.7.44)

EChovirus 1 (strain Farouk / ATCC VR-1038)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
Acta Crystallogr. D 54:1261-1272(1998).
-!- FUNCTION: P2A AND THE P3C POLYPEPTIDES
AT CERTAIN Q/G SITES IN THE POLYPROTEIN
                                               Filman D.J., Wien M.W., Cunningham J.A., "Structure determination of echovirus 1.
                                                                                    MEDLINE=99192672;
                                                                                                                                                       serotype with VPl sequence classification.";
                                                                                                                                                                                                                                                                                coxsackie B viruses.";
J. Gen. Virol. 77:715-725(1996).
                                                                                                                                                                                            Oberste M.S., Maher K., Kilpatrick D.R., Pallansch M.A.; "Molecular evolution of the human enteroviruses: correlation
                                                                                                                                                                                                                             SEQUENCE OF 570-853 FROM N.A. MEDLINE=99138973; PubMed=9971773;
                                                                                                                                                                                                                                                                                                               "The major echovirus group
                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
Bergelson J.M.;
"Receptor interactions,
echovirus 1/8.";
                                                                                    x-ray crystallography (3.55 angstroms)
yebline=99192672; pubMed=10089503;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EC01F
                                                                                                                                                                                                                                                                   \overline{\omega}
                                                                                                                                                                                                                                                                                                                                                    MEDLINE=96203959;
                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 69-330 FROM
                                                                                                                                                                                                                                                                                                                                                                                                           Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=103908;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Enterovirus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Viruses; ssRNA positive-strand viruses,
                                                                                                                                           Virol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 715
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
35; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SCEGVP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SCKPAP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TGKCVPDYNLIVLSDVCDKTKKKTVPVKPLQLVKGDKCKKPM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RGSDEGDYELWVSEDKIDK----IP----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WNLAEGKCVNGVKYKIRRRKQDAQCLVKKVFEDLQLFETACDKCTEADYE-CAFEFVRDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WKAYDYTTENGIKY-----ETQGTRTQTFEDVFVF-----
                                                                                                                                           73:1941-1948(1999).
                                                                                                                                                                                                                                                                                                                                                                                                         (APR-2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1089
1266
1476
1557
1579
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      283
378
410
426
774
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                   Santti J., Pulli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          283
378
410
426
774
1089
1266
1476
1476
1476
                                                                                                                                                                                                                                                                                                               PubMed=8627260;
ti J., Pulli T., Hyypiae
tus group is genetically
                                                                                                                                                                                                                                                                                                                                                                                                         6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8.1%;
27.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  177776
                                                                                                                                                                                                                                                                                                                                                                      N.A
                                                                                                                                                                                                                                                                                                                                                                                                         the
                                                                                                                                                                                                                                                                                                                                                                                                                                            infectious cDNA,
                                                                                                                                                                            and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                12;
                                                                                                                                                                                                                                                                                                                                                                                                         EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEROSKASFI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score
Pred
                                                                                                                                                                            application
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      * * * * * * * * * *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A (IN REF. 2).
C778A0400612ECF4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ガスくスГH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              No ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     S
S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DB
50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RET.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    no
                                                                 Bergelson
                                                                                                                                                                                                                                                                                                                                                                                                                                            and nucleotide
                                                                                                                                                                                                                                                                                                                   T.;
coherent
                                                                                                      2-850
ARE PROTEASES THAT
N. THEY ARE CYSTEINE
                                                                                                                                                                            6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DNA stage;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DCCKFTMAYFAQQQEKTVRNVYTDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                37;
                                                                                                                                                                          picornav:
                                                                                                                                                                                                                                                                                                                                                                                                         databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1579
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CRC64;
                                                                                                                                                                                                                                                                                                                     and
                                                                     Ġ
                                                                     .
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Coat protein; Picornain 2A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Picornaviridae,
                                                                                                                                                                                                                                                                                                                     related
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -SDYKNCDVIFVPKE
                                                                                                                                                                                                                                                                                                                                                                                                                                          sequences
                                                                     Hogle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              42;
                                                                                                                                                                                              of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     e protein
.28)
                    CLEAVE
                                                                     4
                                                                                                                                                                                                                                                                                                                   ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (P3D)].
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                            of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VP2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        173
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           127
```

```
InterPro; IPRO03593; AAA_ATPase.
InterPro; IPRO03099; Cys_protease_3C.
InterPro; IPRO030199; Cys_protease_3C.
InterPro; IPRO03138; Pico_P2A.
InterPro; IPRO03138; Pico_P2A.
InterPro; IPRO03138; Pico_P2A.
InterPro; IPRO0318; Pico_P2A.
InterPro; IPRO03527; Pico_P2B.
InterPro; IPRO03505; RNA_pol_DS_PS.
InterPro; IPRO07095; RNA_pol_DS_PS.
InterPro; IPRO07095; RNA_pol_DS_PS.
InterPro; IPRO07095; RNA_pol_PS_Vir.
Pfam; PPO0548; Cys_protease_3C; 1.
Pfam; PPO0947; Pico_P2A; 1.
R Pfam; PPO0947; Pico_P2A; 1.
R Pfam; PPO0947; Pico_P2A; 1.
R Pfam; PPO0910; RNA_dep_RNA_pol; 1.
R Pfam; PPO091125; Cys_protease_3C; 1.
R Pfam; PPO091125; Cys_protease_3C; 1.
R Pfam; PPO0911274; Pico_P2A; 1.
DR SMART; SM00382; AAA; 1.
DR CHAIN 570 850 COAT PROCOAT PROC
                      -IF FUNCTION: It is thought that the P2C protein attaches to vesicular membranes and is associated with viral RNA synthesis.
-ICATALYTIC ACTIVITY: Selective cleavage of Gln-|-Gly bond in the pollovirus polyprotein. In other picornavirus reactions Glu may be substituted for Gln, and Ser or Thr for Gly.
-ICATALYTIC ACTIVITY: Selective cleavage of Tyr-|-Gly bond in the picornavirus polyprotein. In other picornavirus reactions Glu may be substituted for Gln, and Ser or Thr for Gly.
-ICATALYTIC ACTIVITY: N nucleoside triphosphate = N diphosphate + (RNA)(N).
-ICATALYTIC ACTIVITY: N nucleoside triphosphate = N diphosphate + (RNA)(N).
-ICATALYTIC THE VIRUS CAPSID IS COMPOSED OF 60 ICOSAHEDRAL UNITS, EACH OF WHICH IS COMPOSED OF ONE COPY EACH OF PROTEINS VP1, VP2, VP3, AND VP4.
-ICATALYZED SYPALATIC CLEAVAGES IN VIVO YIELD MATURE PROTEINS.
-ICEAVAGE BETWEEN VP4 AND VP2 IS AUTOCATALYTIC; VP1/P2A IS CATALYZED BY P2A; ALL OTHER CLEAVAGES ARE CATALYZED BY P3C.
-ICATALYZED BY P2A; BALL OTHER CLEAVAGES FAMILY C3.
-ICATALYZED BY P2A; PROTEASE BELONGS TO PEPTIDASE FAMILY C3.
-ICATALYZED BY P3C PROTEASE BELONGS TO PEPTIDASE FAMILY C3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL; AFO;
EMBL; X89;
EMBL; AFO(
PDB; 1EV1;
InterPro;
InterPro;
InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation—the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 <del>:</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                <del>:</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             <del>:</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          <del>:</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PROTEASES.
FUNCTION:
membranes
CATALYTIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AF029859; AAC63944.2; -. X89531; CAA61710.1; -. AF081314; AAD17718.1; -. 1EV1; 27 JAN-99.
             Core protein; Transferase; Myristate;
e; Hydrolase; Thiol protease; 3D-structu
COAT PROTEIN VP4.
COAT PROTEIN VP2.
COAT PROTEIN VP3.
COAT PROTEIN VP1.
PICORNAIN 2A.
CORE PROTEIN P3A.
CORE PROTEIN P3A.
CORE PROTEIN P3A.
CORE PROTEIN P3A.
GENOME-LINKED PROTEIN VPG.
PICORNAIN 3C.
RNA-DIRECTED RNA POLYMERASE.
MYRISTATE.
PROTEASE 3C (POTENTIAL).
PROTEASE 3C (POTENTIAL).
N -> M (IN REF. 2).
N -> R (IN REF. 2).
                                                                                                                                                                                                                                                                     3D-structure
                   CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
STRAND
STRAND
TURN
STRAND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            \begin{array}{c} 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441\\ 777441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       >< < >
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        * * * *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SER SE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REF.
REF.
REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     \omega \omega \omega \omega
```

Db Sear Job	Qy	Db Qy	Фр	DB Qy	M B Q	
Qy 170 YTDSSCKPAP : Db 1212 QFKSKCRIEP Search completed: August Job time : 13.0933 secs	116 1185	60 1125	5 1068	Query Match Best Local Similarity Matches 42; Conser	STRAND TURN HELLIX TURN HELLIX TURN TURN STRAND STRAND STRAND STRAND STRAND	
1212 QFKSKCRIEP 1221 mpleted: August 1, : 13.0933 secs	YTDSSCKPAP	YKNCDVIFVP Y	LNATILYKNK QKFIEWLKVK	ANEAKLGSYQ : ATLALIGCTS	h 8. Similarity 22. 42; Conservative	444444444 4555 600855 600855
1, 2003, 12:15:53	179	YKNCDVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRN-V 169 	LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSD 11 : : : : :	ANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKK 59	0%; Score 79.5; DB 1; Length 2184; 1%; Pred. No. 82; 24; Mismatches 73; Indels 51; Gaps	417 427 428 428 435 437 437 443 456 456
		169 1211	115 1184	59 1124	7;	

Copyright

GenCore version 5.1.6 (c) 1993 - 2003 Compugen Ltd.

•>

```
Result
                                                                                                                                                                                                                                                                                                                                                                           Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                      Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OM protein -
                                                                                                                                                                                                                                                                                                                               Database
                                                                                                                                                                                                                                                                                                                                                           Post-processing: Minimum Match 0%
                                                                                                                                                                                                                                                                                                                                                                                                Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence:
                                                                                                                                                                                                                                                                 Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                              Score
                                                                                        seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein search, using sw
                                                                                                                                                                                                                                                                                                                                                                          length:
                                                                                                                                                                                                                             Query
Match
                                                                                                                                                                                                                                                                                                PIR_76:*
1: p1r1:*
2: p1r2:*
3: p1r3:*
4: p1r4:*
                                                                                                                                                                                                                                                                                                                                                                                                                              BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-087-195-8
989
                                                                                                                                                                                                                                                                                                                                                                                                               283308 seqs,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 August 1,
 Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                     NPTWANEAKLGSYQDAWKSL..
Length DB
                                                                                                                                                                                                                                                                                                                                                                           2000000000
2003, 12:15:04 ; Search time 13.52 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                              Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                96168682 residues
                                                                                                              T12821
G71616
I46001
S30484
S73939
                                                                                                                                                                                                                              ij
                                                                                                AF1254
                                                                                                                                                                                                                                                    SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (without alignments)
1294.578 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                     EKTVRNYYTDSSCKPAPAQN 187
           late embryogenesis
glutaminyl-tRNA sy
hypothetical prote
MAP kinase kinase
                                          carboxypeptidase y
hypothetical prote
conserved hypothet
N-acetylmuramoy1-L
Na(+)-translocatin
                                                                                                                    hypothetical prote
hypothetical prote
C4b-binding prote1
pol polyprotein -
                                                                                                      oligopeptide trans
helicase II - huma
                                                                                                                                   RNA-directed RNA p
hypothetical prote
hypothetical prote
                                                                                                                                                          beta-fructofuranos
beta-fructofuranos
                                                                                                                                                                                myoblast city prot
                                                                                                                                                                                               two-component sens
                                                                                                                                                                                                                             Description
                                                                                FL-160-4 protein
                                                                                       complement factor
                                                                                               penicillin-binding
                                                                                                                                                                         hypothetical prote
                                                                                                                                                                                         variant surface
                                                                                                                                                                                                              hypothetical
                                                                                                                                                                                                              prote
```

45	44	43	42	41	40	39 .	38	37	36	35	34	33	32	31	30	
76.5	76.5	77	77	77	77	77	77	77	77	77	77	77.5	77.5	77.5	77.5	
7.7	7.7	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	
434	414	2245	2034	1108	762	719	656	484	421	334	231	1156	769	423	306	
N	N	N	N	N	N	N	N	N	N	2	N	N	N	N	2	
C82885	AE1500	T18278	T22147	T38673	JC7174	S44237	S30483	A64251	C70038	T47983	T41566	в70356	F89870	AB1142	C64015	
membrane nuclease	N-carbamyl-L-amino	myosin heavy chain	hypothetical prote	probable transcrip	N, N-dimethylformam	trypomastigote sur	pol polyprotein -	glutamate-tRNA lig	maltose/maltodextr	NAM-like protein -	translin associate	chromosome assembl	serine proteinase	N-carbamyl-L-amino	hypothetical prote	

ALIGNMENTS

hypothetical protein YDR267c - yeast (Saccharomyces cerevisiae)

N;Alternate names: hypothetical protein D9954.11

C;Species: Saccharomyces cerevisiae
C;Species: Saccharomyces cerevisiae
C;Date: 24-Aug-1996 #sequence_revision 06-Sep-1996 #text_change 19-Apr-2002
C;Accession: S70127

RESULT 1 S70127

R;Le,

submitted to the EMBL Data Library, May 1996 A;Description: The sequence of S. cerevisiae cosmid 9954 A;Reference number: S70124 A;Accession: S70127 C;Superfamily: unassigned WD repeat proteins; WD repeat homology F;54-87/Domain: WD repeat homology <WD2>F;103-136/Domain: WD repeat homology <WD2>F;149-182/Domain: WD repeat homology <WD3> A; Gene: MIPS: YDR267c A; Cross-references: S A; Map position: 4R Ş 밁 Š 밁 A;Molecule type: DNA A;Residues: 1-330 <LET> A;Cross-references: EMBL:U51030; NID:g1332633; PID:g1230640; GSPDB:GN00004; MIPS:YDR2 Genetics: Matches Query Match Best Local Local Similarity 225 124 165 114 69 16 AWKSLQQDQNKRYYLAQATQTTDGVW------GEEFTCVSVTAEKIGKKKLNATILYKN 38; VPKERGSDEGDYELWVSE 141 KHLTDLKESHETITVWKAYDYTTE-----NGIKYETQGTRTQTFEDVFVFSDYKNCDVIF 123 AW-----SNDGYYLATCSR-DKSVWIWETDESGEEYECISVLQEH--SQDVKHVIWHPS VWKYMGDDEDDQQEWVCE 242 EALLASSSYDDTVRIWKDYDDDWECVAVLNGHEGTVWSSDFDKTEGVFRLCSGSDDSTVR Conservative SGD: S0002675 11.5%; 17; Score 113.5; Pred. No. 0. Mismatches .016; 62; 2 Indels Length 330; 21; Gaps 68 164

two-component sensor histidine kinasė lisK [Imported] - Listeria monocytogenes (C;Species: Listeria monocytogenes (C;Species: Listeria monocytogenes (C;Species: 1.1steria monocytogenes (C;Species: Natural monoc

E.; Maitournam,

Α:

; Bloec Fsihi,

(Strai

RESULT AB1247

```
RESULT 4
S18453
variant surface o
                                                                                                                                                                                ģ
                                                                                                                                                                                                                                                                                                                                                                                                                                    Science 294, 849-852, 2001
A; Authors: Kreft, J.; Kuhn, M.; Kunst, F.; Kurapkat, G.; Madueno, ok, C.; Schlueter, T.; Simoes, N.; Tierrez, A.; Vazquez-Boland, J. A;Title: Comparative genomics of Listeria species.
A;Reference number: AB1077; MUID:21537279; PMID:11679669
A;Accession: AF1609
                                                                                                                  δõ
                                                                                                                                                    В
   C; Species:
                                                                                          В
                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                         Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C;Species: Listeria innocua
C;Date: 27-Nov-2001 #sequence_revision 27-Nov-2001 #text_change
C;Accession: AF1609
                                                                                                                                                                                                                                                                                                                                                              A;Cross-references: GB:AL592022; PIDN:CAC96646.1; A;Experimental source: strain Clip11262
                                                                                                                                                                                                                                                                                                                                                                                             A; Molecule type: DNA
A; Residues: 1-483 <GLA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              R;Glaser, P.; Frangeul, L.;
; Dominguez-Bernal, G.; Duc
D.; Jones, L.M.; Karst, U.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 3
AF1609
two-component sensor histidine kinase lisk [imported] - Listeria innocua (strain Clip11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ok, C.; Schlueter, T.; Simoes, N.; Tierrez, A.; Vazquez-Boland, A;Title: Comparative genomics of Listeria species. A; Reference number: AB1077; MUID:21537279; PMID:11679669 A; Accession: AB1247 A; Status: preliminary A; Molecule type: DNA A; Residues: 1-483 <GLA>
                                                                                                                                                                                                                                                                                                                                     A; Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                           A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Cross-references: GB:NC_003210; PIDN:CAC99456.1; A;Experimental source: strain EGD-e
                                                                                                                                                                                                                                                                                        Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Lisk
                                                                                                                                                                                                                                                                                                                                       lisk
                                                                                          407
                                                                                                                        131
                                                                                                                                                                                                                 308
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    308
   Trypanosoma
                                                                                                                                                                                                                                             18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  18
                                                                                                                                                                                                                                                                             37;
                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                          DVRDYGEGISQEEIDKIFN--RFYRVDKARSREK 438
                                                                                                                      DEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEK 164
                                                                                                                                                    DTDLRALIQHNHLEQILIIIMDNAVKYSGDGTEV----DMHVYKEQKQIHI---
                                                                                                                                                                        HETITVWKAYDY------TTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGS
                                                                                                                                                                                                            KKLVQEMIDLSRAEQISQTKE----LQITDVNATVEQV---RRNFEVMYENFTET-LKED
                                                                                                                                                                                                                                         KSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATILYKNKHLTDLKES 77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DVRDYGEGISQEEIDKIFN--RFYRVDKARSREK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEK 164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HETITVWKAYDY-----TTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGS 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KKLVQEMLDLSRAEQISQTKE----LQITDVNATVEQV----RRNFEVMYENFTFT-LKED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATILYKNKHLTDLKES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DTDLRALIQHNHLEQILIIIMDNAVKYSGDGTEV----DMHVYKEQKQIHI------
   glycoprotein MITat 1.6 -
anosoma brucei
                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Duchaud, E.; Durand,
                                                                                                                                                                                                                                                                                      8.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8.8%;
24.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Buchrieser, C.; Amend,
                                                                                                                                                                                                                                                                           29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                29;
                                                                                                                                                                                                                                                                      Score 87; DB
Pred. No. 5.7;
29; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score 87; DB Pred. No. 5.7; 29; Mismatches
              Trypanosoma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5.7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            L.; Dussurget,
                                                                                                                                                                                                                                                                                                      2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           . 58;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ۶,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                438
                                                                                                                                                                                                                                                                         58;
                                                                                                                                                                                                                                                                                                                                                                              PID:g16413888; GSPDB:GN00178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A.; Baquero, F.; Berche, P.; Bloecker
Dussurget, O.; Entian, K.D.; Fsihi, H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PID:g16410794; GSPDB:GN00177
                                                                                                                                                                                                                                                                                                      Length 483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                        30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         27-Nov-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        J.A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .
A:;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Maitournam,
Voss, H.; W
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Voss,
                                                                                                                                                                                                              359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   359
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        н.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Wehland
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Wehland
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Α.,
RESULT
AG1085
                                                                                  δÃ
                                                                                                                   망
                                                                                                                                               Qγ
                                                                                                                                                                               밁
                                                                                                                                                                                                           Qy
                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Б
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                Genetics:
                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                455
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    266
                                                                                                                                                   98
                                                                                                                                                                                                            44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     65
                                                                                                                                                                                                                                          35;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             42;
                                                                                       FAQQQ
```

```
myoblast city protein - fruit fly (Dros
C;Species: Drosophila melanogaster
C;Date: 24-Mar-1999 #sequence_revision
C;Accession: T03284
                                                                                                                                                                                                                                                                                                                                           A;Gene: mbc
A;Cross-references: FlyBase:FBgn0015513
A-Map position: 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             C;Accession: T03284
R;Erickson, M.R.S.; Galletta, B.J.; Abmayr, S.M.
J. Cell Biol. 138, 589-603, 1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Cross-references: EMBL:X56764; NID:g10474; PIDN:CAA40083.1; C;Superfamily: variant surface glycoprotein C;Keywords: glycoprotein; membrane protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R;Carrington, M.; Miller, N.; Blum, M.; Roditi, I.; Wiley, D.
J. Mol. Biol. 221, 823-835, 1991
A;Title: Variant specific glycoprotein of Trypanosoma brucei
A;Reference number: S18445; MUID:92046037; PMID:1942032
A;Accession: S18453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: mRNA
A; Residues: 1-1970 <E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Title: Drosophila myoblast city encodes a conserved protein that is Reference number: Z14881; MUID:97392689; PMID:9245788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Status: preliminary; translated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Accession: T03284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: mRNA
A; Residues: 1-529 <CAR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C;Date: 16-Sep-1992 #sequence_revision 16-Sep-1992 #text_change 20-Aug-1999
C;Accession: S18453
                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local Similarity
553 VRLMQANGTTITQGQHILAVYKIDHKKYDKTVANCYLELPATVAELQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     glycoprotein;
                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATRAKTDPYLQIWRAFKNLED----CESTFTSG----
                                                                                                                                   ETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAY 157
                                                                                                                                                                                                                        EFTCVSVTAEKIGKKKLNATILYKNKH------LTDLKESHETITVWKAYDYTTENGIKY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KELKEAQEKATQANQN 415
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PKERGSDEGDYELWVSEDKIDKIPDCCKF-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFV 124
                                                                                                                                                                               EFARIAKTSE----KNVEVSVCVANEQGYLMPGVLSIGAGHQPIDEYKSVVYYHDDKPKW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NVYTDSSCKPAPA-QN 182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  --KDGKDFYPQKLWDAMDKKDLLKDATQTNEIKKLADITDRSELNKVLLYYTRQKEQTLT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -YSRPSPETLKAADETKTAIK--NYVVQKEGKYD-QATDKE
                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                               <ERI>
EMBL:AF007805;
                                                                                         -ETFKIHVPIEDFKQCHLRFVLKHRSSNE---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8.7%;
21.4%;
                                                                                                                                                                                                                                                                                           21.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  26;
                                                                                                                                                                                                                                                                      27;
                                                                                                                                                                                                                                                                                         Score 85.5;
Pred. No. 45;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (Drosophila melanogaster)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 86; DB
Pred. No. 7.8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 from
                                                                                                                                                                                                                                                                                                                                                                                                                                                 NID:g2367443; PID:g2367444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein
                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     24-Mar-1999
                                           EKTVRNVYTDSSCKPAPAQ
                                                                                                                                                                                                                                                                                                                DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -----TMAYFAQQQEKTVR 167
                                                                                                                                                                                                                                                                    54;
                                                                                                                                                                                                                                                                                                             2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                         · - - - QKDRTEK - - -
                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         D.,
                                                                                                                                                                                                                                                                                                                1970;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  consists of
                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PID:g10475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Turner,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     17-Nov-2000
                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                essential
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  two
                                                                                                                                                                               510
                                                                                                                                                                                                                          97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  domains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  for
```

```
A;Reference number: Z15715

A;Reference number: Z15715

A;Accession: T06491

A;Status: preliminary; translated from GB/EMBL/DDBJ

A;Molecule type: mRNA

A;Residues: 1-555 <ZHA>

A;Cross-references: EMBL:X85327; NID:g1160487; PID:g773259

A;Experimental source: cv. Little Marvel

C;Genetics:
A;Note: bfruct1

C;Superfamily: beta-fructofuranosidase
C;Keywords: glycosidase; hydrolase
                                                              밁
                                                                                                 ş
                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N;Alternate names: invertase
C;Species: Pisum sativum (garden pea)
C;Date: 23-Apr-1999 #sequence_revision 23-Apr-1999 #text_change 21-May-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  B 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Experimental source: strain C; Genetics: A; Gene: lmo0086
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Authors: Kreft, J.; Kuhn, M.; Kunst, F.; Kurapkat, G.; Madueno, E.; ok, C.; Schlueter, T.; Simoes, N.; Tierrez, A.; Vazquez-Boland, J.A.; A;Title: Comparative genomics of Listeria species.
A;Reference number: AB1077; MUID:21537279; PMID:11679669
A;Accession: AG1085
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                D.; Jones, L.M.; Karst,
Science 294, 849-852, 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       hypothetical protein lmo0086 [imported] - Listeria monocytogenes (strain EGD-e) C;Species: Listeria monocytogenes C;Species: Listeria monocytogenes C;Date: 27-Nov-2001 #sequence_revision 27-Nov-2001 #text_change 27-Nov-2001 C;Accession: AGI085 C;Accession: AGI085 Buchrieser, C.; Amend, A.; Baquero, F.; Berche, P.; Cilaser, P.; Frangeul, L.; Buchrieser, C.; Amend, L.; Dussurget, O.; Entian, K.D.; I Dominguez-Bernal, G.; Duchaud, E.; Durand, L.; Dussurget, O.; Entian, K.D.; I
                      Ş
                                                                                                                                                                                     ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Residues: 1-1959 <GLA>
A;Cross-references: GB:NC_003210; PIDN:CAC98301.1; PID:g16409445; GSPDB:GN00177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      submitted to the EMBL Data Library, January 1996 A; Reference number: 215715
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C; Accession: T06491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      beta-fructofuranosidase (EC 3.2.1.26) -
                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          162
                                                                  213 -AILYKSKNFVDWVEAKHPLHSAEGTGMWECPDFYPVLDKNLLRTGVDTSRNGDDDVRHV
                                                                                                                                                    174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              49
                        99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                type: DNA
                                                                                                                                                                                          2 PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLN
                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                          ATILYKNKHLTDLKE-----SHETITVWKAYDY-----
                                                                                                                                                    PTIANKINSSSFRDPTTS-----WLGK-----DGFWR-----VLIGSKIDTKGM-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TEKSLPSMTSTDYSWSPAYGQ 1444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DVSVTELSPDTDY - - - - VVKV - - - - -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AISAENIGVYDKRVKLDVIGEDKDNTTVKKANKNELFVNVYKADGTTLVNSIRVDGLPTR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SVTAEKIG--KKKLNATILYKNKHLTDLKESHET---ITVWKAYDYTTENGIKYETQGTR 103
                   TQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSDEG--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QEKTVRNV-YTDSSCKPAPAQ 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TOTFEDVFVFSDYKNCDVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQ--Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                          8.5%;
23.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        34;
                                                                                                                                                                                                                                                          Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score
Pred.
                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                          NO ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        garden
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -EGKYDLLDGNGEKDKV-----YYSETIK 1423
                                                                                                                                                                                                                                                        DB
12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2.
                                                                                                                                                                                                                                      52;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        44;
                                                                                                                                                                                                                                                                           Length 555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 1959;
    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                        135
                                                                                                        -TTENG---IKYE
                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Waitournam, A.; Ma
Voss, H.; Wehland
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            161
                                                                                                                                                  212
                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; Bloecker
Fsihi, H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 beta-fructofuranosidase (EC 3.2.1.26)

N;Alternate names: cell wall invertase
C;Species: Pisum sativum (garden pea)
C;Date: 30-Apr-1999 #sequence_revision:
C;Accession: T06380
                      Ş
                                                                밁
                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                    A; Title: Functional A; Reference number: A; Accession: T00494
                                                                                                                                                                                                                                                                                                                                                                                                                                                  R;van der Lende, T.R.; Duitman, E.H.; Gunnewijk, M.G.W.; Yu, L.; Wessels, J.G.H. Virology 217, 88-96, 1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RNA-directed RNA polymerase (EC 2.7.7.48) - white button mushroom virus 1 N;Alternate names: RNA-dependent RNA polymerase C;Species: white button mushroom virus 1 C;Date: 23-Apr 1999 #sequence_revision 23-Apr-1999 #text_change 08-Oct-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Description: hydrolyzes sucrose to glucose C; Superfamily: beta-fructofuranosidase C; Keywords: glycosidase; hydrolase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Experimental source:
C; Genetics:
A; Gene: bfruct1
C; Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: mRNA
A; Residues: 1-582 <ZHA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Reference number: 215639
A;Accession: T06380
A;Status: preliminary; translated from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                               A;Gene: L1
C;Keywords: nucleotidyltransferase
                                                                                                                                                                                                                                                                                                                        A; Molecule type: genomic A; Residues: 1-1078 < VAN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                submitted to the EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    R; Zhang, L.; Cohn,
                                                                                                                                                                                                                                                                                C;Genetics:
                                                                                                                                                                                                                                                                                                    A;Cross-references: EMBL:X94361;
                                                                                                                                                                                                                                                                                                                                                                A; Status: translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              174 PTIANKINSSSFRDPTTS-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    272
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        272 LKVSLDDTKHDHYLIGSYDVVKDVFVPENGFEDNGFVLRYDY 313
                                                                53 ALSNINPDDNAPFIFVQTCELAEAI-GVQIAMVLIVKEGI----IQQTDRYKSLSREEQK 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  62 ATILYKNKHLTDLKE-----SHETITVWKAYDY-------
                                                                                                        16 AWKSLOODONKRYYLAQATOTTDGVWGEEFTCVSVTAEKIGKKKLNATILYKN-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2 PTWANEAKLGSYQDAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              T00494
--KHLTDLKESHETITVWKAYDYT-----TENGIKYETQGTRTQTFEDVFVFSDYKNCDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -AILYKSKNFVDWVEAKHPLHSAEGTGMWECPDFYPVLDKNLLRTGVDTSRNGDDDVRHV 271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LKVSLDDTKHDHYLIGSYDVVKDVFVPENGFEDNGFVLRYDY 313
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSDEG----
                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              N.S.; Mitchell, J.P.
MBL Data Library, May
                                                                                                                                                                                                                                                                                                                                                                                                       analysis of dsRNAs (L1,L3, L5 and M2)
Z14158; MUID:96177126; PMID:8599239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL:AF063246; NID:g3152879; ce: cv. Little Marvel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8.5%;
                                                                                                                                                                      21.48;
                                                                                                                                                                                            8.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                22;
                                                                                                                                                  33;
                                                                                                                                             Score 83.5; D
Pred. No. 32;
33; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 84; DB
Pred. No. 13;
22; Mismatches
                                                                                                                                                                                                                                                                                                    NID: g1217917; PIDN: CAA64144.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ------WLGK-----DGFWR-----VLIGSKIDTKGM-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              мау
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            30-Apr-1999 #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            and
                                                                                                                                                                                            DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PIDN:AAC17166.1; PID:g3152880
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            fructose
                                                                                                                                                  71;
                                                                                                                                                                                          <u>ب</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                52;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                          Length 1078;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                              associated with isometric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -TTENG---IKYE
                                                                                                                                                                                                                                                                                                  PID:e219181
                                                                                                                                                  39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                50;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                22-Jun-1999
```

212

Gaps

9

121

```
A. Gross-references: EMBB:AF020713; NID:g3025478; PID:g3025535; PIDN:AAC13030.1

A. Gross-references: EMBB:AF020713; NID:g3025478; PID:g3025535; PIDN:AAC13030.1

R. Kunst, F.; Ogasawara, N.; Moszer, I.; Albertini, A.M.; Alloni, G.; Azevedo, V.; Berter

C.; Bron, S.; Broullet, S.; Bruschi, C. V.; Caldwell, B.; Capuano, V.; Carter, N.M.; Chc

A.; Ehrlich, S.D.; Emmerson, P.T.; Entlan, K.D.; Errington, J.; Fabret, C.; Ferrari, E.

Nature 390, 249-256, 1997

A.; Authors: Foulger, D.; Fritz, C.; Fujita, M.; Fujita, Y.; Fuma, S.; Galizzi, A.; Galler

iech, J.; Harwood, C.R.; Henaut, A.; Hilbert, H.; Holsappel, S.; Hosono, S.; Hullo, M.F.

Koetter, P.; Koningstein, G.; Krogh, S.; Kumano, M.; Kurita, K.; Lapidus, A.; Lardinois,
A.; Authors: Lauber, J.; Lazarevic, V.; Lee, S.M.; Levine, A.; Liu, H.; Masuda, S.; Maueel

y, M.; Ogawa, K.; Ogiwara, A.; Oudega, B.; Park, S.H.; Parro, V.; Pohl, T.M.; Portetelle

Rieger, M.; Rivolta, C.; Rocha, E.; Roche, B.; Rose, M.; Sadaie, Y.; Sato, T.; Scanlon,
A.; Authors: Schleich, S.; Schroeter, R.; Scoffone, F.; Sekiguchi, J.; Sekowska, A.; Seror

akeuchi, M.; Tamakoshi, A.; Tanaka, T.; Terpstra, P.; Tognoni, A.; Tosato, V.; Uchiyama,
T.; Winters, P.; Wipat, A.; Yamamoto, H.; Yanane, K.; Yasumoto, K.; Yata, K.; Yoshida, K.

A.; Mitcers, P.; Wipat, A.; Yamamoto, H.; Yanane, K.; Yasumoto, K.; Yata, K.; Yoshida, K.

A.; Reference number: A69580; MUID:98044033; PMID:9384377

A.; Status: nucleic acid sequence not shown; translation not shown
      hypothetical protein PFB0375w - malaria parasite (Plasmodium falciparum)
C;Species: Plasmodium falciparum
C;Date: 13-Nov-1998 #sequence revision 7
                                                                                              RESULT
G71616
                                                                                                                                                                                                                                                                    ρ
                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                     ΔÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                   ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     hypothetical protein yonG - Bacillus subtilis phage SPBc2 C:Species: Bacillus subtilis phage SPBc2 C:Species: Bacillus subtilis phage SPBc2 C:Date: 13-Aug-1999 #sequence_revision 13-Aug-1999 #text_change 15-Oct-1999 C:Accession: T12821; A69914
R:Lazarevic, V: Duesterhoeft, A.; Soldo, B.; Hilbert, H.; Mauel, C.; Karame submitted to the EMBL Data Library, August 1997
                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Cross-references: GB:299115; GB:AL009126; NID:g2634478; PIDN:CAB14028.1; PID:e1183557
A;Experimental source: strain 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Description: The complete
A;Reference number: Z17583
A;Accession: T12821
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  日
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
Β
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Residues: 1-306 < KUN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Molecule type: DNA
A; Residues: 1-306 <LAZ>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           yong
                                                                                                                                                                                                                        175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    37; Conserv
                                                                                                                                                                                                                                                                                                                                            KSTEDI----SKEDIDELMQFWGRGLDVEDY-IWLQNEYID-----FTNRYECDSKGM 174
                                                                                                                                                                                                                                                                                                                                                                                                 QTFEDVFVFSDYKNCDVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAY-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                             VSAVNESESKKKSAGNVLGTYMKNIGMKDYKSK-----TWADSEFDFEEEQEYTTQLLLA 126
                                                                                                                                                                                                              ELLINEICLTRLDIRKRRENGEKVDQQQKTLQDLLGSSNLKP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VSVTAEKIGKKKLNATIL---YKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRT 104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                L----SGIDEYTYD---AREKVNEVSNLLKESKHPATKAVCARYLQQNFQAAAPDYANA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TLKHVHDVQNNHNKLWVEK-YKYTHRVVLSYNDIYHKVKGLYISV---GCVKSSFGTDDV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8.3%; Score 82.5;
22.8%; Pred. No. 8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         nucleotide sequence of the Bacillus subtilis SPbetac2 prophi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -----CCKFTMAYFAQQQEKTVRNVYTDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 2;
   #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 306;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                     216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    49;
   21-Jul-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                 157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       163
RESULT 13
S30484
pol polypr
```

```
A;Cross references: EMBL:231693; NID:g469117; PIDN:CAA83498.1; PID:g469118 C;Superfamily: C4b-binding protein alpha chain; complement factor H repeat F;50-107/Domain: complement factor H repeat homology <FH1> F;112-169/Domain: complement factor H repeat homology <FH2> F;174-234/Domain: complement factor H repeat homology <FH3> F;239-294/Domain: complement factor H repeat homology <FH4> F;299-362/Domain: complement factor H repeat homology <FH5> F;366-425/Domain: complement factor H repeat homology <FH6> F;369-362/Domain: complement factor H repeat homology <FH6> F;369-483/Domain: complement factor H repeat homology <FH8> F;489-483/Domain: complement factor H repeat homology <FH8>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R;Hillarp, A.; Thern, A.; Dahlback, B.

J. Immunol. 153, 4190-4199, 1994
A;Title: Bovine C4b binding protein. Molecular cloning.
A;Reference number: I46001; MUID:95015909; PMID:7930621
A;Accession: I46001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Experimental source: C; Genetics:
                                       δÃ
                                                                                    В
                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C4b-binding protein alpha chain - bovine C;Species: Bos primigenius taurus (cattle) C;Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change C;Accession: 146001; S43190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           R; Gardner, M.J.; Tettelin, H.; Carucci, D.J.; Cummings, L.M.; Pertea, M.; Salzberg, S.; Zhou, L.; Sutton, G.G.; Clayton, Science 282, 1126-1132, 1998
A; Title: Chromosome 2 sequence of the human malaria parasite FA; Reference number: A71600; MUID:99021743; PMID:9804551
A; Accession: G71616
밁
                                                                                                                                                                         밁
                                                                                                                                                                                                              ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: mRNA
A; Residues: 1-610 <HIL>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Status: preliminary; nucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C; Accession: G71616
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 30
                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                                                                                   Matches
434
                                                                                                                                                                            315
                                                                                                                                  132 EGDYEL------WVSEDKID----
                                                                                                                                                                                                                       78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21
                                                                                                                                                                                                                                                                 32;
                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                         YFAQQQEKTVRNVYT 171
                                                                                                                                                                            HQTQTEQQVYDIGFVLSYKCHFGYKPETDGPTTVTCQSNLEWSPYIECKEVCCPEPNLNN 374
VIAHGQHKVVSKFFT
                                                                                                                                                                                                       HETITVWKAYD-----YTTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSD 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KNCDVIFVPKERGSDEGDYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTVRNVYTD 172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NHNIIYGGYDTCPLKEIYTNYHVYKSYIHTKENIIKVEAKENVDIDNINNKDDIFYNNDH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGT----RTQTFEDVFVFSDY 116
                                                                                       YGSITLHRRPSTSTHCTYISGDKISYECHSKYMFDALCTKHGTWSPRTPECRPDCK-SPP
                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                   8.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8.3%; Score 82.5;
25.9%; Pred. No. 74;
                                                                                                                                                                                                                                                                 14;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        13;
                                                                                                                                                                                                                                                              Score 81; DB
Pred. No. 26;
14; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GB:AE001362; NID:g3845164; PIDN:AAC71864.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              · IDDDKIKKI - QCQKNCTIY -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sequence not shown;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB
                                                                                                                                                                                                                                                                                                          1;
                                                                                                                                                                                                                                                                 47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2
                                                                                                                                                                                                                                                                                                        Length 610
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 1802;
                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              translation
                                                                                                                              ----KIPDC---CKFTMA 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               factor H repeat homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -HDIEKNSYVD 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Plasmodium falciparum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Aravind, L.; Koonin, R.; White, O.; Smith,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    alpha-
                                                                                                                                                                                                                                                              42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10-Sep-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        31;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              not
                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and beta-chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     # E
```

polyprotein

human

immunodeficiency

virus

```
В
                                                                                                                                                                                                                             C;Genetics:
A;Gene: oppF
A;Genetic code: SGC3
A;Genetic code: SGC3
C;Superfamily: unassigned ATP-binding cassette proteins; ATP-binding cassette homology C;Superfamily: unassigned ATP-binding; P-loop
C;Koywords: ATP; nucleotide binding; P-homology #status atypical <ABCL>
F;38-764/Domain: ATP-binding cassette homology #status atypical <ABCL>
F;48-55/Region: nucleotide-binding motif A (P-loop)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C;Species: human immunodeficiency virus type 2, HIV-2
C;Date: 02-Dec-1993 #sequence_revision 01-Dec-1995 #text_change 23-Mar-2001
C;Accession: S30484
R;Gao, F.; Yue, L.; White, A.T.; Pappas, P.G.; Barchue, J.; Hanson, A.P.; Greene, B.M.; submitted to the EMBL Data Library, December 1992
A;Description: Human infection by genetically diverse SIVSM-related HIV-2 in west Africa
                             Ş
                                                                                                                                                                                                                                                                                                                                                                                   A;Molecule type: DNA
A;Residues: 1-851 <HIM>
A;Residues: 1-851 <HIM>
A;Cross-references: EMBL:AE000058; GB:U00089; NID:g1674291; PIDN:AAB96261.1; PID:g167431
A;Note: the nucleotide sequence was submitted to the EMBL Data Library, November 1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    R; Himmelreich, R.; Hilbert, H.; Plagens, H.; Pirkl, E.; Li, B.C.; Herrmann, Nucleic Acids Res. 24, 4420-4449, 1996
A;Title: Complete sequence analysis of the genome of the bacterium Mycoplasm A; Reference number: S73327; MUID:97105885; PMID:8948633
A;Accession: S73939
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 14
$77333
collapse transport ATP-binding protein oppF - 1
N;Alternate names: hypothetical protein G07_orf851
C;Species: Mycoplasma pneumoniae
A;Variety: ATCC 29342
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ₿ %
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Cross-references: EMBL:M8711.
C;Superfamily: pol polyprotein
밁
                                                                                                                        ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C;Date: 27-Feb-1997 #sequence_revision 25-Apr-1997 #text_change 02-Feb-2001
C;Accession: S73939
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: nucleic acid
A; Residues: 1-656 <GAO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Reference number: S30460 A; Accession: S30484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Status: preliminary; nucleic acid sequence not shown; translation not shown
                                                                                                                                                                       Query Match
Best Local S
Matches 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local S
Matches 42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              217
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              15
                                           60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           42;
                                                                                                                                                                       Similarity 23.7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VPKERGSDEG - - -
                                      -- LNATILYKNKHLTDLKESHETITVWKAYDYTTENGIKYETQGTRTQTFEDVFVFS---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KESHETITVWKA----YDYTTENGI----KYETQGTRTQTFEDVFVFSDYKNCD---VIF 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DAWKSLQQDQNKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKKLNATILYKNKHLTDL
                                                                                   TTQQKAKVSTQAFATWQKLQQTKQNLKAYRAQ
                                                                                                                            TWANEAKLGSYODA-WKSLOO-DONKRYYLAQATQTTDGVWGEEFTCVSVTAEKIGKKK-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RNV 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QLKELLNDLGFLTPEEKFQKDPPYHWMGYELWPTKWKLQKIE------LPQREDWTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PQG-----WKGSPAIFQYTMRNVLEPFRKANSDVTLIQYMDDILIASDRTDLEHDKVVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DAYFSIPLDEEFRQYTA------FTLPSVNNAEPGKR-----YIYK-----VL 162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL: M87114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8.2%;
                                                                                                                                                                                              8.2%;
23.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         25;
                                                                                                                                                                                           Score 81;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 81;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -DYELWVSEDKIDKIPDCCKFTMAYFAQQQEKTV 166
                                                                                                                                                                                                                  DB 2;
-TTKNYIKDSRQ--NTQLTDDVFAFSYND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  <u>ب</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         50;
                                                                                                                                                                         ,
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mycoplasma pneumoniae (strain ATCC
                                                                                                                                                                                                                Length 851
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 656
                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels ·
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 bacterium Mycoplasma pneumoniae
                                                                                                                                                                         56;
                                                                                   -MAEELQNKPR
                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              267
                                                                                   292
                                                                                                                              59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             293
```

```
R;Stayton, C.L.; Dabovic, B.; Gulisano, M.; Gecz, J.; Broccoli, Hum. Mol. Genet. 3, 1957-1964, 1994
A;Title: Cloning and characterization of a new human Xq13 gene, A;Reference number: 138614; MUID:95179111; PMID:7874112
A;Accession: I38614
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 15
I38614
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     д
Search completed: August Job time : 15.52 secs
                                                                                                       Š
                                                                                                                                               밁
                                                                                                                                                                               Ş
                                                                                                                                                                                                                   당
                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                                        A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-1641 <RES>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C; Species: Homo sapiens (man)
C; Date: 29-May-1998 #sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                         맑
                                                                                                                                                                                                                                                                                                                                                                     A;Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    C; Accession: I38614
                                                                                                                                                                                                                                                                                                                                                                                                       A;Cross-references: EMBL:U09820; NID:g606832; PIDN:AAC50069.1; PID:g606833
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          helicase II -
                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                     RAD54L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       171
                                                                         154
                                                                                                             141
                                                                                                                                                                                                                     54
                                                                                                                                                                                                                                                         32
                                                                                                                                                 GLSDIAEKFLKKDQSDETSED-----DKKQSKKGTEEKKKPSDFKKKVIKMEQQYE--SS
                                                                                                                                                                                 YTTENGIKYETQGTRTQTFEDVFVFSDYKNCDVIFVPKERGSD------EGDYELWVS 140
                                                                                                                                                                                                                       QASASTDGVDKLSGKEQSFTSLEVRKVAETK-----EKSKHL-----KTKTCKKVQD 100
                                                                                                                                                                                                                                                       QATQTTDGV---WGEEFTCVSVTAEKIGKKKLNATILYKNKHLTDLKESHETITVWKAYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SDAKAE 392
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TDSSCK 176
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -- DYKNCDVIFVPKERGSDEGDYELWVSE--DKIDKIPDCCKFTMAYFAQQQEKTVRNVY 170
                                                                           SDGTEKLPEREEICHFPKGI---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MVDKKRRLVLVLSEYYKALPYFYDNWIHQNADRFDELTNAVFFDLIDVVIALNRDFANVE 386
                                                                                                           EDKIDKIP---DCCKFTMAYFAQQQEKTVRNVYTDSSCK 176
                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       #sequence_revision 29-May-1998 #text_change 05-Nov-1999
                                                                                                                                                                                                                                                                                                              8.2%;
                    ۲,
                      2003, 12:16:36
                                                                                                                                                                                                                                                                                             21;
                                                                                                                                                                                                                                                                                                              Score 81;
Pred. No.
                                                                                                                                                                                                                                                                                               Mismatches
                                                                         ----KQIKNGTTDGEKK 186
                                                                                                                                                                                                                                                                                                                  89;
                                                                                                                                                                                                                                                                                             56;
                                                                                                                                                                                                                                                                                                                                 Length 1641
                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                             40;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   V.; Giovanazzi, S.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 encoding a putative
                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                 153
                                                                                                                                                                                                                                                           88
                                                                                                                                                                                                                                                                                             80
```

THIS PAGE BLANK (USPTO)